Changes for the Better

MITSUBISHI ELECTRIC

SPLIT-TYPE, HEAT PUMP AIR CONDITIONERS
SPLIT-TYPE, AIR CONDITIONERS

May 2008
No. OC329
REVISED EDITION-B

SERVICE MANUAL

Series PCA Ceiling Suspended R407C/R410A

Indoor unit
[Model names]

[Service Ref.]

PCA-RP71HA

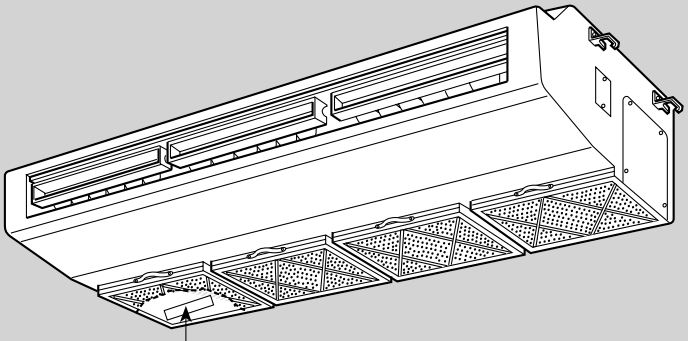
PCA-RP125HA

PCA-RP71HA
PCA-RP71HA#1
PCA-RP125HA
PCA-RP125HA#1

Revision:
- PCA-RP71·125HA#1 are added in REVISED EDITION-B.
- Some descriptions have been modified.

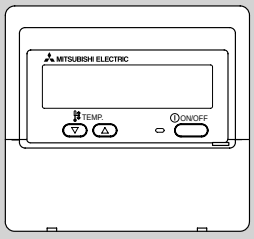
- Please void OC329 REVISED EDITION-A.

Note:
- This manual describes only service data of the indoor units.
- RoHS compliant products have <G> mark on the spec name plate.
- For servicing of RoHS compliant products, refer to the RoHS Parts List.



INDOOR UNIT

Model name indication



REMOTE CONTROLLER

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1 TECHNICAL CHANGES

PCA-RP71HA ➔ PCA-RP71HA#1
PCA-RP125HA ➔ PCA-RP125HA#1

INDOOR CONTROLLER BOARD(I.B.) has been changed.

2 REFERENCE MANUAL

2-1. OUTDOOR UNIT'S SERVICE MANUAL

Service Ref.	Service Manual No.
PUHZ-RP35/50/60/71/100/125/140VHA(1) PUHZ-RP100/125/140YHA	OC334
PUHZ-RP71/100/125/140VHA(1)-A	OC337
PUHZ-RP200/250YHA(1)(2)	OC338
PUHZ-RP200/250YHA(1)-A	OC339
PU(H)-P • VGAA.UK PU(H)-P • YGAA.UK	OC336
PUHZ-P100/125/140VHA.UK	OC359
PUHZ-RP35/50/60/71/100/125/140VHA2(1) PUHZ-RP100/125/140YHA2(1) PUHZ-RP35/50/60/71/100VHA3 PUHZ-RP100YHA3	OC374
PU(H)-P71/100VHA(1).UK PU(H)-P100/125/140YHA(1).UK	OC379
PUHZ-P100/125/140VHA2(1).UK	OCH415 / OCB415
PUHZ-RP71/100/125/140VHA2-A PUHZ-RP100/125/140YHA2-A	OCH422 / OCB422
PUHZ-BP100/125/140VHA-A PUHZ-BP200/250YHA-A	OCH423 / OCB423
PUHZ-P200/250YHA2	OCH424 / OCB424
PUHZ-HRP71/100VHA PUHZ-HRP100/125YHA	OCH425 / OCB425
PUHZ-RP200/250YHA2	OCH428 / OCB428

2-2. TECHNICAL DATA BOOK

Series (Outdoor unit)	Manual No.
PUHZ-RP • HA(-A)	OCS01
PU(H)-P • GAA.UK	OCS02
PUHZ-RP • HA2	OCS05
PUHZ-P • HA	OCS06
PU(H)-P • HA	OCS07
PUHZ-P • VHA2, PUHZ-P • YHA	OCS08
PUHZ-RP • HA2-A	OCS09
PUHZ-BP • HA	OCS10
PUHZ-HRP • HA	OCS11

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3 SAFETY PRECAUTION

3-1. ALWAYS OBSERVE FOR SAFETY

Before obtaining access to terminal, all supply circuits must be disconnected.

3-2. CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilising refrigerant R407C

Do not use the existing refrigerant piping.

The old refrigerant and lubricant in the existing piping contains a large amount of chlorine which may cause the lubricant deterioration of the new unit.

Use "low residual oil piping"

If there is a large amount of residual oil (hydraulic oil, etc.) inside the piping and joints, deterioration of the lubricant will result.

Store the piping to be used during installation indoors with keep both ends sealed until just before brazing.
(Store elbows and other joints in a plastic bag.)

If dust, dirt, or water enters the refrigerant cycle, deterioration of the oil and compressor trouble may result.

Use ESTER , ETHER or HAB as the lubricant to coat flares and flange connection parts.

If large amount of mineral oil enter, that can cause deterioration of refrigerant oil etc.

Use liquid refrigerant to charge the system.

If gas refrigerant is used to seal the system, the composition of the refrigerant in the cylinder will change and performance may drop.

Do not use a refrigerant other than R407C.

If another refrigerant (R22, etc.) is used, the chlorine in the refrigerant may cause the lubricant deterioration.

Use a vacuum pump with a reverse flow check valve.

The vacuum pump oil may flow back into the refrigerant cycle and cause the lubricant deterioration.

Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

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[1] Cautions for service

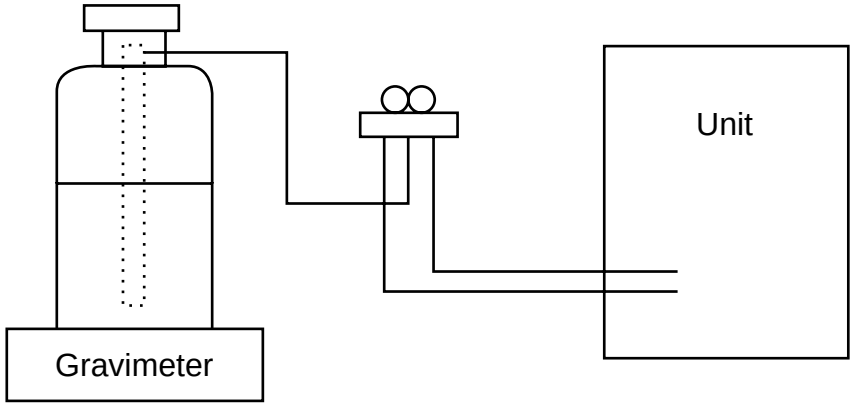
·After recovering the all refrigerant in the unit, proceed to working.
·Do not release refrigerant in the air.
·After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

[2] Refrigerant recharging

(1) Refrigerant recharging process

①Direct charging from the cylinder.

·R407C cylinder are available on the market has a syphon pipe.
·Leave the syphon pipe cylinder standing and recharge it.
(By liquid refrigerant)



(2) Recharge in refrigerant leakage case

·After recovering the all refrigerant in the unit, proceed to working.
·Do not release the refrigerant in the air.
·After completing the repair service, recharge the cycle with the specified amount of liquid refrigerant.

[3] Service tools

Use the below service tools as exclusive tools for R407C refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	·Only for R407C.
		·Use the existing fitting SPECIFICATIONS. (UNF7/16)
		·Use high-tension side pressure of 3.43MPa·G or over.
②	Charge hose	·Only for R407C.
		·Use pressure performance of 5.10MPa·G or over.
③	Electronic scale	———
④	Gas leak detector	·Use the detector for R134a or R407C.
⑤	Adapter for reverse flow check.	·Attach on vacuum pump.
⑥	Refrigerant charge base.	———
⑦	Refrigerant cylinder.	·For R407C ·Top of cylinder (Brown) ·Cylinder with syphon
⑧	Refrigerant recovery equipment.	———

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CAUTIONS RELATED TO NEW REFRIGERANT

Cautions for units utilising refrigerant R410A

Use new refrigerant pipes.

In case of using the existing pipes for R22, be careful with the followings.
· For RP71VHA3 and RP125 be sure to perform replacement operation before test run.
· Change flare nut to the one provided with this product. Use a newly flared pipe.
· Avoid using thin pipes.

Make sure that the inside and outside of refrigerant piping is clean and it has no contamination such as sulfur hazardous for use, oxides, dirt, shaving particles, etc.
In addition, use pipes with specified thickness.

Contamination inside refrigerant piping can cause deterioration of refrigerant oil etc.

Store the piping to be used during installation indoors and keep both ends of the piping sealed until just before brazing. (Leave elbow joints, etc. in their packaging.)

If dirt, dust or moisture enter into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Use ester oil, ether oil or alkylbenzene oil (small amount) as the refrigerant oil applied to flares and flange connections.

If large amount of mineral oil enter, that can cause deterioration of refrigerant oil etc.

Charge refrigerant from liquid phase of gas cylinder.

If the refrigerant is charged from gas phase, composition change may occur in refrigerant and the efficiency will be lowered.

Do not use refrigerant other than R410A.

If other refrigerant (R22 etc.) is used, chlorine in refrigerant can cause deterioration of refrigerant oil etc.

Use a vacuum pump with a reverse flow check valve.

Vacuum pump oil may flow back into refrigerant cycle and that can cause deterioration of refrigerant oil etc.

Use the following tools specifically designed for use with R410A refrigerant.

The following tools are necessary to use R410A refrigerant.

Tools for R410A	
Gauge manifold	Flare tool
Charge hose	Size adjustment gauge
Gas leak detector	Vacuum pump adaptor
Torque wrench	Electronic refrigerant charging scale

Keep the tools with care.

If dirt, dust or moisture enter into refrigerant cycle, that can cause deterioration of refrigerant oil or malfunction of compressor.

Do not use a charging cylinder.

If a charging cylinder is used, the composition of refrigerant will change and the efficiency will be lowered.

Ventilate the room if refrigerant leaks during operation. If refrigerant comes into contact with a flame, poisonous gases will be released.

[1] Cautions for service

(1) Perform service after collecting the refrigerant left in unit completely.
(2) Do not release refrigerant in the air.
(3) After completing service, charge the cycle with specified amount of refrigerant.
(4) When performing service, install a filter drier simultaneously.
Be sure to use a filter drier for new refrigerant.

[2] Additional refrigerant charge

When charging directly from cylinder

· Check that cylinder for R410A on the market is syphon type.
· Charging should be performed with the cylinder of syphon stood vertically. (Refrigerant is charged from liquid phase.)

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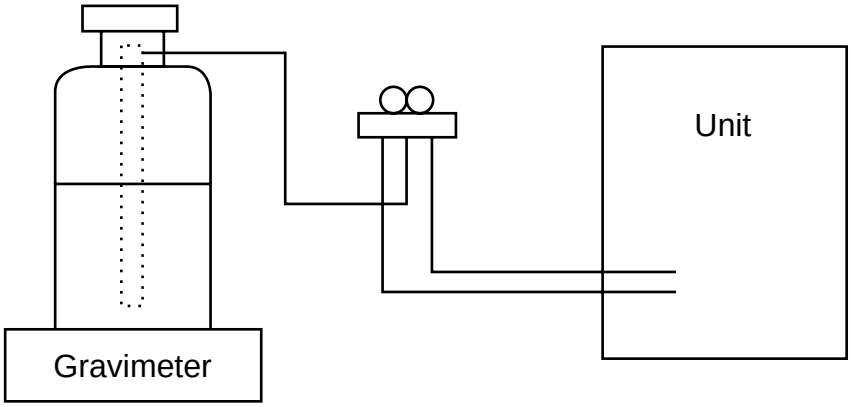

[3] Service tools

Use the below service tools as exclusive tools for R410A refrigerant.

No.	Tool name	Specifications
①	Gauge manifold	·Only for R410A
		·Use the existing fitting specifications. (UNF1/2)
		·Use high-tension side pressure of 5.3MPa·G or over.
②	Charge hose	·Only for R410A
		·Use pressure performance of 5.09MPa·G or over.
③	Electronic scale	——
④	Gas leak detector	·Use the detector for R134a, R407C or R410A.
⑤	Adaptor for reverse flow check	·Attach on vacuum pump.
⑥	Refrigerant charge base	——
⑦	Refrigerant cylinder	·Only for R410A Top of cylinder (Pink) Cylinder with syphon
⑧	Refrigerant recovery equipment	——

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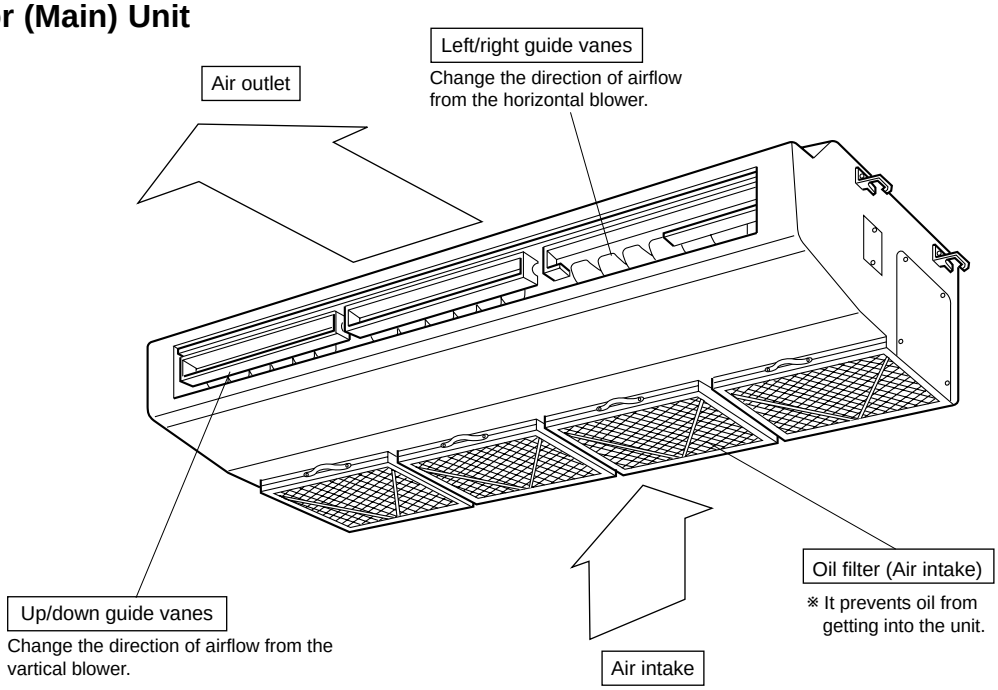
4 PART NAMES AND FUNCTIONS

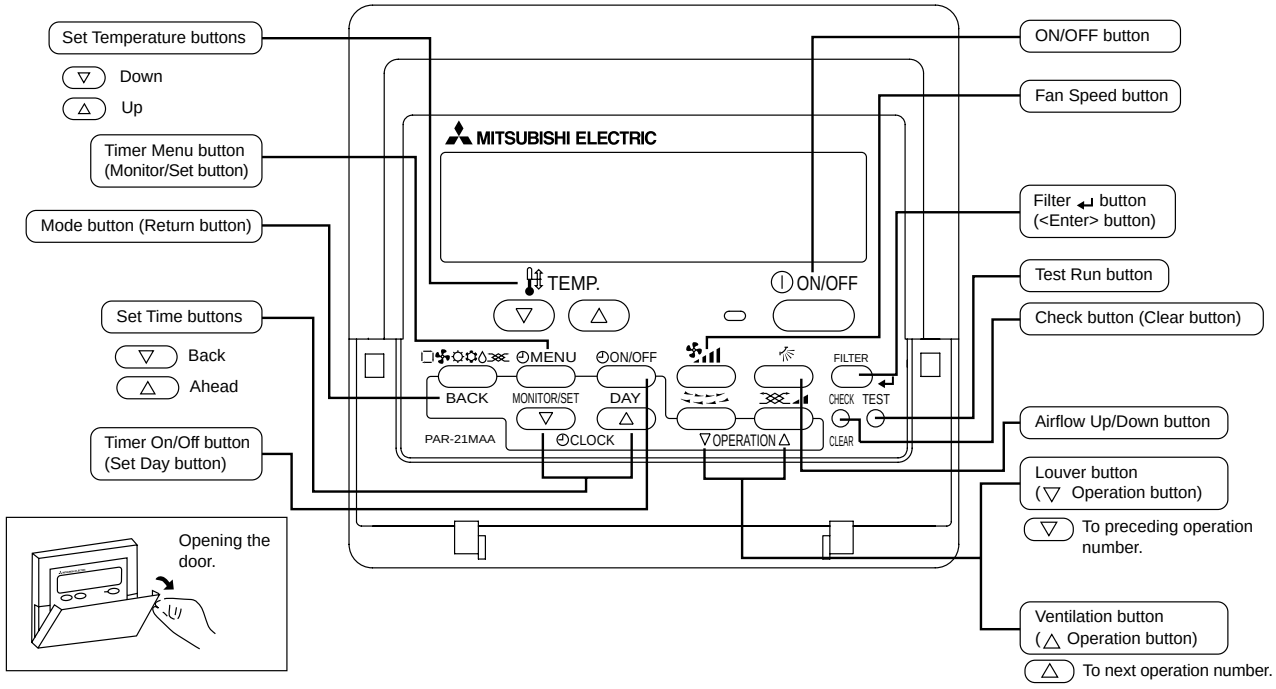
Indoor (Main) Unit


Left/right guide vanes
Change the direction of airflow from the horizontal blower.
Air outlet
Oil filter (Air intake)
※ It prevents oil from getting into the unit.
Up/down guide vanes
Change the direction of airflow from the vartical blower.
Air intake

Remote controller

Once the controls are set, the same operation mode can be repeated by simply pressing the ON/OFF button.

Operation buttons



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Display

For purposes of this explanation, all parts of the display are shown as lit. During actual operation, only the relevant items will be lit.

Day-of-Week
Shows the current day of the week.

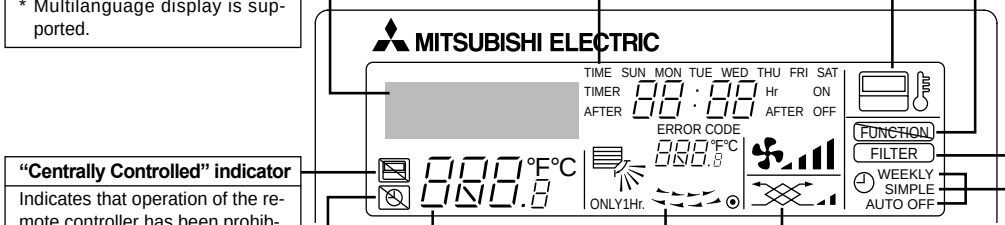
Time/Timer Display
Shows the current time, unless the simple or Auto Off timer is set.
If the simple or Auto Off timer is set, shows the time remaining.

Identifies the current operation
Shows the operating mode, etc.
* Multilanguage display is supported.

"Centrally Controlled" indicator
Indicates that operation of the remote controller has been prohibited by a master controller.

"Timer Is Off" indicator
Indicates that the timer is off.

Temperature Setting
Shows the target temperature.



Up/Down Air Direction indicator
The indicator ↘ shows the direction of the outcoming airflow.

"One Hour Only" indicator
Displayed if the airflow is set to low and downward during COOL or DRY mode. (Operation varies according to model.)
The indicator goes off after one hour, at which time the airflow direction also changes.

Room Temperature display
Shows the room temperature.

Louver display
Indicates the action of the swing louver. Does not appear if the louver is stationary.

◉ (Power On indicator)
Indicates that the power is on.

"Sensor" indication
Displayed when the remote controller sensor is used.

"Locked" indicator
Indicates that remote controller buttons have been locked.

"Clean The Filter" indicator
Comes on when it is time to clean the filter.

Timer indicators
The indicator comes on if the corresponding timer is set.

Fan Speed indicator
Shows the selected fan speed.

Ventilation indicator
Appears when the unit is running in Ventilation mode.

Caution

Only the Power on indicator lights when the unit is stopped and power supplied to the unit.

If you press a button for a feature that is not installed at the indoor unit, the remote controller will display the "Not Available" message.

If you are using the remote controller to drive multiple indoor units, this message will appear only if he feature is not present at every unit connected.

When power is turned ON for the first time, it is normal that "PLEASE WAIT" is displayed on the room temperature indication (For max. 2minutes). Please wait until this "PLEASE WAIT" indication disappear then start the operation.

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5 SPECIFICATIONS

INDOOR UNIT	**Service Ref.**			**PCA-RP71HA, PCA-RP71HA#1**	
	Mode			Cooling	Heating
	Power supply(phase, cycle, voltage)			Single phase, 50Hz, 230V	
		Input	kW	0.09	0.09
		Running current	A	0.43	0.43
		Starting current	A	0.86	0.86
	External finish			Stainless steel	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive) x No.		Sirocco fan (direct) x 2	
		Fan motor output	kW	0.04	
		Airflow(Low-High)	m³/min(CFM)	17-19(600-670)	
		External static pressure	Pa(mmAq)	0(direct blow)	
	Operation control & Thermostat			Remote controller & built-in	
	Noise level(Low-High)		dB	34-38	
	Unit drain pipe I.D.		mm(in.)	26(1)	
	Dimensions	W	mm(in.)	1,136(44-3/4)	
		D	mm(in.)	650(25-5/8)	
		H	mm(in.)	280(11)	
	Weight		kg(lbs)	41(90)	

INDOOR UNIT	**Service Ref.**			**PCA-RP125HA, PCA-RP125HA#1**	
	Mode			Cooling	Heating
	Power supply(phase, cycle, voltage)			Single phase, 50Hz, 230V	
		Input	kW	0.26	0.26
		Running current	A	1.19	1.19
		Starting current	A	2.38	2.38
	External finish			Stainless steel	
	Heat exchanger			Plate fin coil	
	Fan	Fan(drive) x No.		Sirocco fan (direct) x 4	
		Fan motor output	kW	0.08 + 0.08	
		Airflow(Low-High)	m³/min(CFM)	30-38(1,060-1,350)	
		External static pressure	Pa(mmAq)	0(direct blow)	
	Operation control & Thermostat			Remote controller & built-in	
	Noise level(Low-High)		dB	44-50	
	Unit drain pipe I.D.		mm(in.)	26(1)	
	Dimensions	W	mm(in.)	1,520(59-7/8)	
		D	mm(in.)	650(25-5/8)	
		H	mm(in.)	280(11)	
	Weight		kg(lbs)	56(124)	

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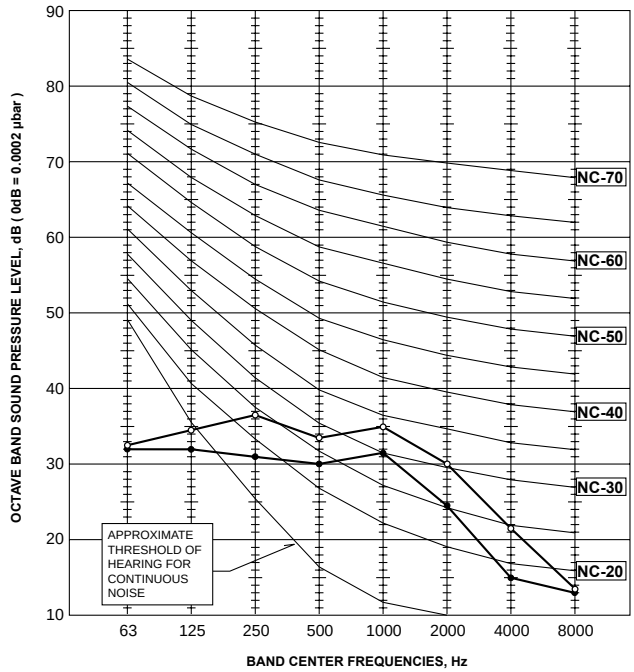
6 NOISE CRITERION CURVES

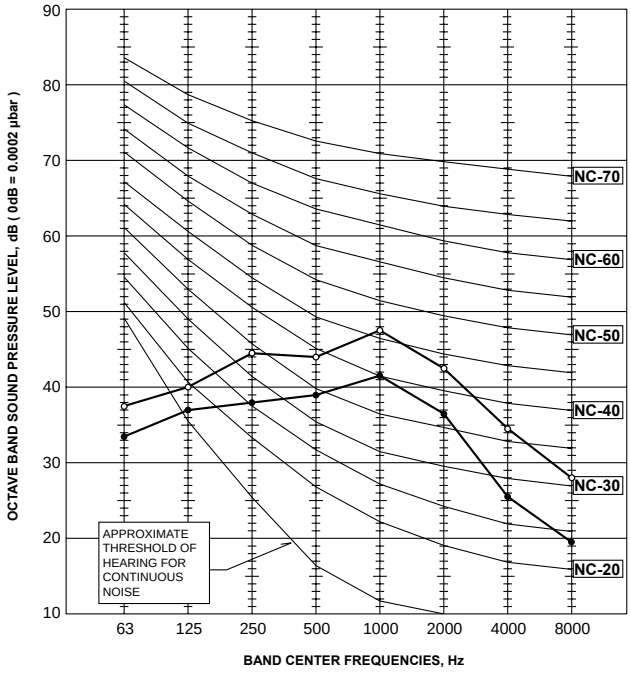
PCA-RP71HA
PCA-RP71HA#1

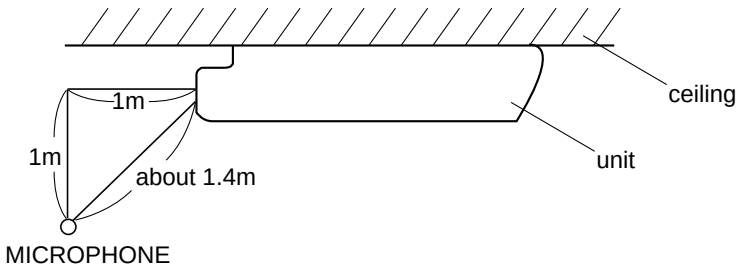
NOTCH	SPL(dB)	LINE
High	38	
Low	34	



PCA-RP125HA
PCA-RP125HA#1

NOTCH	SPL(dB)	LINE
High	50	
Low	44	





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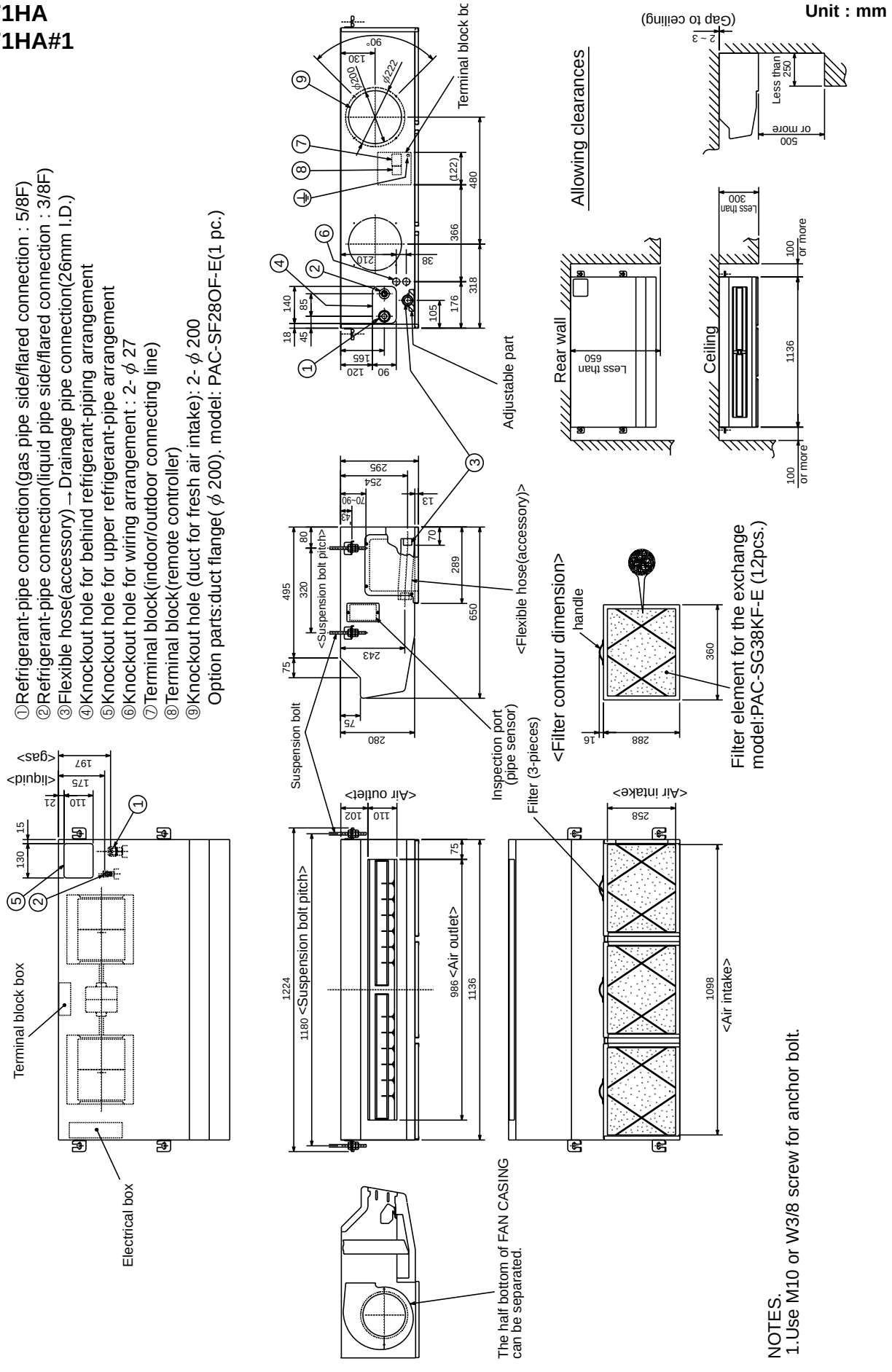
7 OUTLINES AND DIMENSIONS

PCA-RP71HA
PCA-RP71HA#1

Unit : mm



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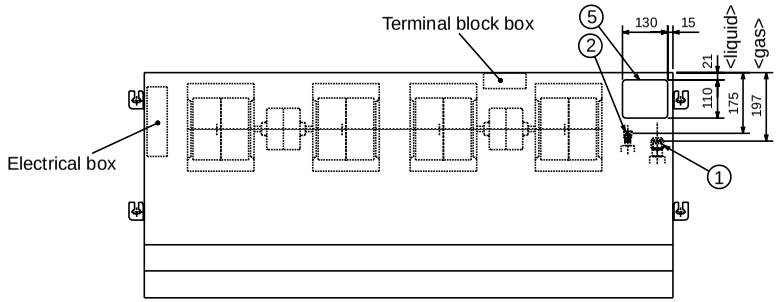
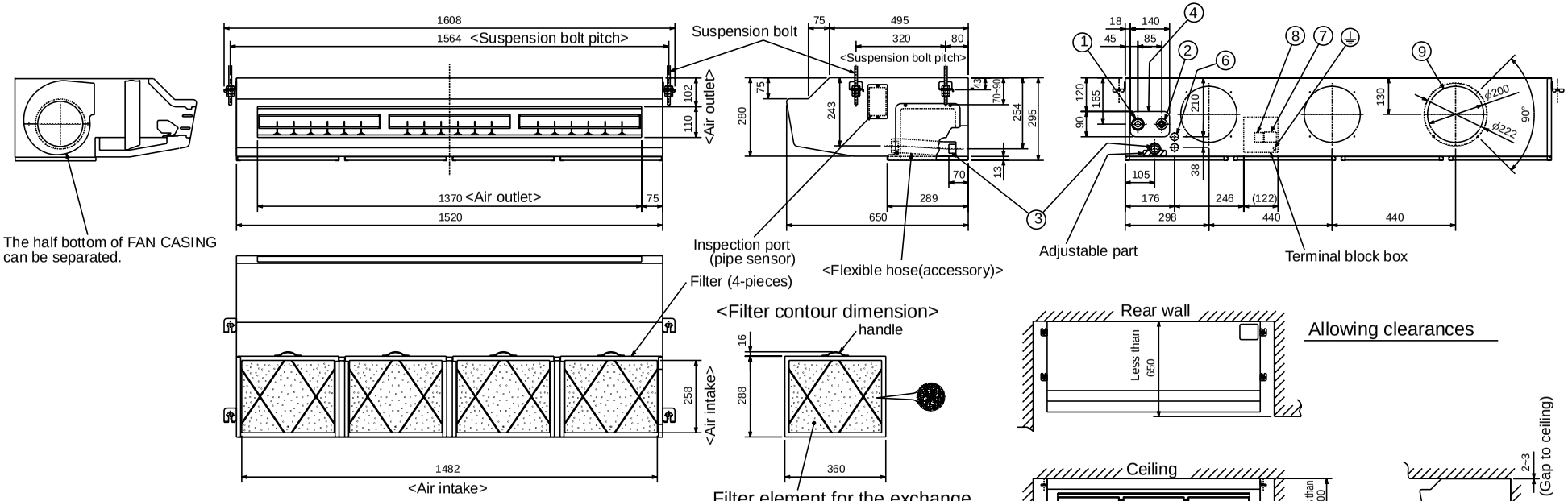
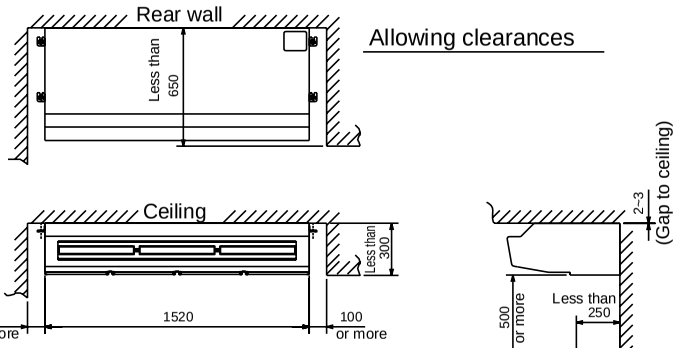


①Refrigerant-pipe connection(gas pipe side/flared connection : 5/8F, 3/4F)
②Refrigerant-pipe connection(liquid pipe side/flared connection : 3/8F)
③Flexible hose(accessory)→Drainage pipe connection(26mm I.D.)
④Knockout hole for behind refrigerant-piping arrangement
⑤Knockout hole for upper refrigerant-pipe arrangement
⑥Knockout hole for wiring arrangement : 2-ϕ 27
⑦Terminal block(indoor/outdoor connecting line)
⑧Terminal block(remote controller)
⑨Knockout hole (duct for fresh air intake) : 2-ϕ 200
Option parts:duct flange(ϕ 200). model: PAC-SF28OF-E(1 pc.)





NOTES.
1.Use M10 or W3/8 screw for anchor bolt.

Use the current nuts meeting the pipe size of the outdoor unit.

Available pipe size

	RP125
② LIQUID SIDE	ϕ 9.52 ○
① GAS SIDE	ϕ 15.88 ○
	ϕ 19.05

○ : Initial flare nut size

Unit : mm

8 WIRING DIAGRAM

PCA-RP71HA PCA-RP125HA
PCA-RP71HA#1 PCA-RP125HA#1

[LEGEND]

SYMBOL		NAME	SYMBOL	NAME
P. B		INDOOR POWER BOARD	MF1, MF2	FAN MOTOR
I. B		INDOOR CONTROLLER BOARD	C1, C2	CAPACITOR(FAN MOTOR)
	FUSE	FUSE (T6.3AL250V)	H2	DEW PREVENTION HEATER
	ZNR	VARISTOR	TB2	TERMINAL BLOCK(INDOOR UNIT POWER (OPTION))
	CN2L	CONNECTOR (LOSSNAY)		
	CN32	CONNECTOR (REMOTE SWITCH)	TB4	TERMINAL BLOCK(INDOOR/OUTDOOR CONNECTING LINE)
	CN41	CONNECTOR (HA TERMINAL-A)		
	CN51	CONNECTOR (CENTRALLY CONTROLL)	TB5,TB6	TERMINAL BLOCK(REMOTE CONTROLLER TRANSMISSION LINE)
	LED1	POWER SUPPLY (I. B)		
	LED2	POWER SUPPLY (R. B)	TH1	ROOM TEMP.THERMISTOR (0°C/15k, 25°C/5.4k DETECT)
	LED3	TRANSMISSION(INDOOR-OUTDOOR)		
	X1	RELAY (DEW PREVENTION HEATER)	TH2	PIPE TEMP.THERMISTOR/LIQUID (0°C/15k, 25°C/5.4k DETECT)
	X4	RELAY(FAN MOTOR)		
	X5	RELAY(FAN MOTOR)	TH5	COND./ EVA.TEMP.THERMISTOR (0°C/15k, 25°C/5.4k DETECT)
	X6	RELAY(FAN MOTOR)		
	SW1	SWITCH (MODEL SELECTION) ※See Table 1.	R. B	WIRED REMOTE CONTROLLER BOARD
	SW2	SWITCH (CAPACITY CODE) ※See Table 2.		
	SWE	SWITCH (EMERGENCY OPERATION)		

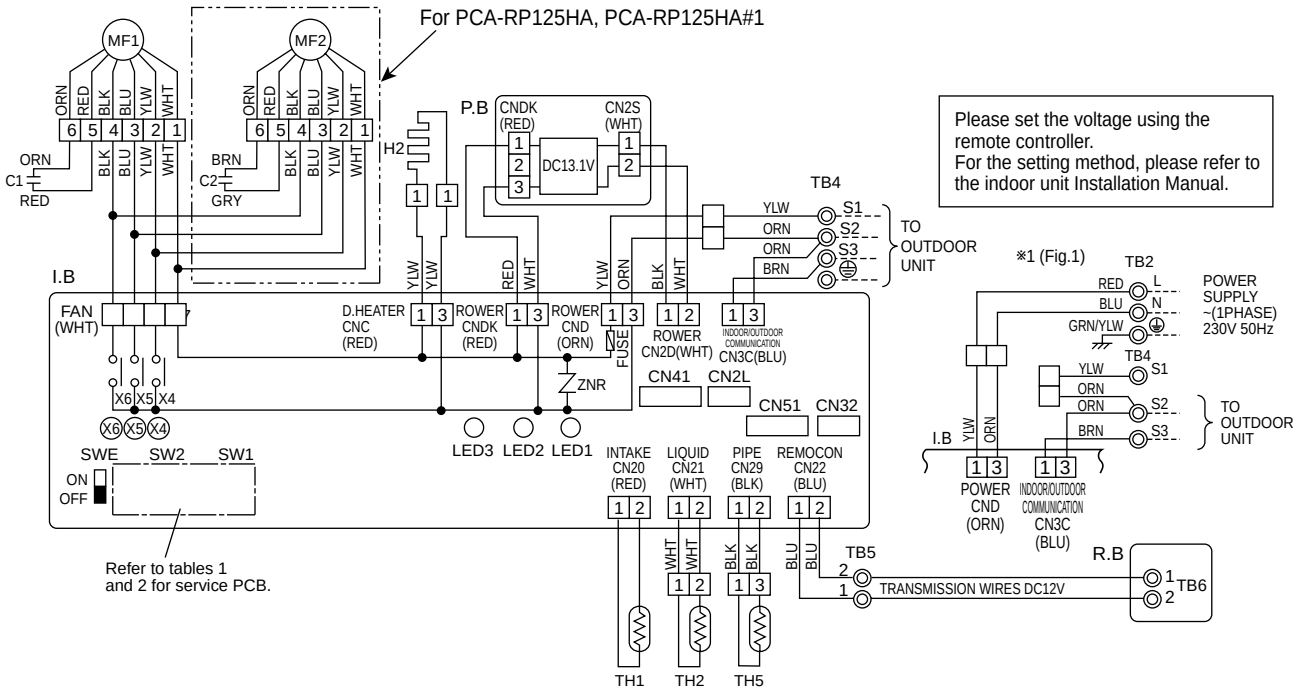


Table 1

SW1
Service board
1 2 3 4 5 ON OFF

Table 2

SW2			
MODELS	Service board	MODELS	Service board
PCA-RP71HA	1 2 3 4 5 ON OFF	PCA-RP125HA	1 2 3 4 5 ON OFF

NOTES:
1.Since the outdoor side electric wiring may change be sure to check the outdoor unit electric wiring for servicing.
2.Indoor and outdoor connecting wires are made with polarities, make wiring matching terminal numbers (S1,S2,S3).
3.Symbols used in wiring diagram above are, : Connector, : Terminal (block).
※1 ; When work to supply power separately to Indoor and Outdoor unit was applied, refer to Fig1.
※2 ; For power supply system of this unit, refer to the caution label located near this diagram.

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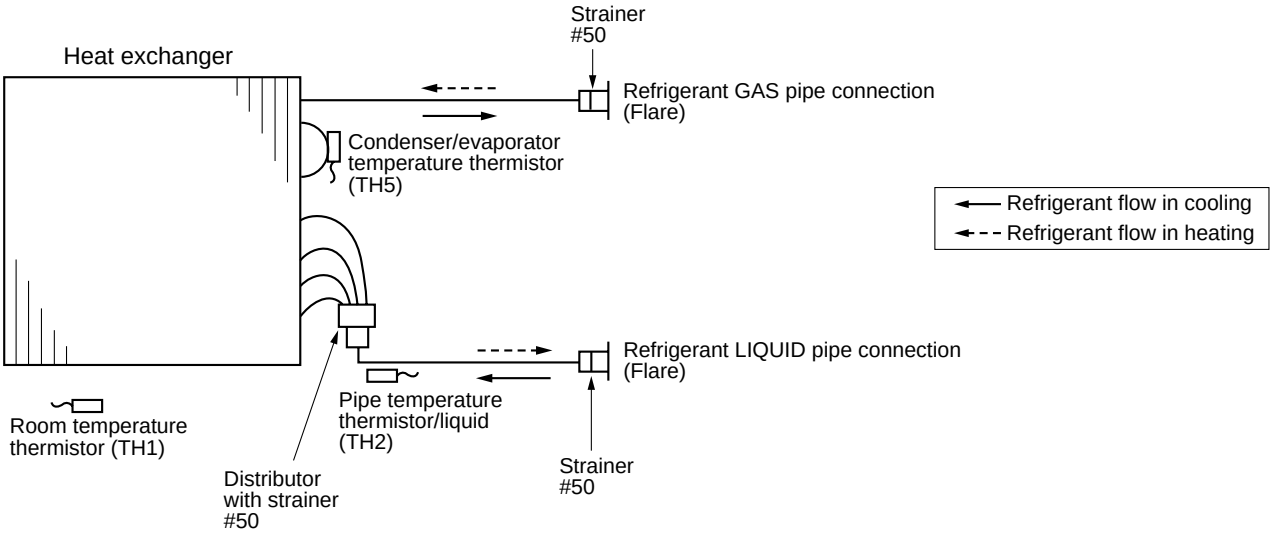
9 REFRIGERANT SYSTEM DIAGRAM

PCA-RP71HA **PCA-RP71HA#1**
PCA-RP125HA **PCA-RP125HA#1**



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10 TROUBLESHOOTING

10-1. TROUBLESHOOTING

<Error code display by self-diagnosis and actions to be taken for service (summary)>

Present and past error codes are logged and displayed on the wired remote controller or controller board of outdoor unit. Actions to be taken for service and the trouble reoccurrence at field are summarized in the table below. Check the contents below before investigating details.

Note : Refer to the manual of outdoor unit for malfunction-diagnosis method by remote controller.

Unit conditions at service	Error code	Actions to be taken for service (summary)
The trouble is reoccurring.	Displayed	Judge what is wrong and take a corrective action according to “SELF-DIAGNOSIS ACTION TABLE” (10-2).
	Not displayed	Conduct troubleshooting and ascertain the cause of the trouble according to “TROUBLESHOOTING BY INFERIOR PHENOMENA ” (10-3).
The trouble is not reoccurring.	Logged	①Consider the temporary defects such as the work of protection devices in the refrigerant circuit including compressor, poor connection of wiring, noise and etc. Re-check the symptom, and check the installation environment, refrigerant amount, weather when the trouble occurred, and wiring related. ②Reset error code logs and restart the unit after finishing service. ③There is no abnormality in electrical components, controller boards, and remote controller.
	Not logged	①Recheck the abnormal symptom. ②Identify the cause of the trouble and take a corrective action according to “TROUBLESHOOTING BY INFERIOR PHENOMENA ” (10-3). ③Continue to operate unit for the time being if the cause is not ascertained. ④There is no abnormality in electrical components, controller boards, remote controller etc.

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10-2. SELF-DIAGNOSIS ACTION TABLE

Note: Refer to the manual of outdoor unit for the details of display such as F, U, and other E.

Error Code	Abnormal point and detection method	Cause	Countermeasure
P1	**Room temperature thermistor (TH1)** ① The unit is in 3-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after 3 minutes. (The unit returns to normal operation, if it has been reset normally.) ② Constantly detected during cooling, drying, and heating operation. Short: -90℃ or more Open: -40℃ or less	① Defective thermistor characteristics ② Contact failure of connector (CN20) on the indoor controller board (Insert failure) ③ Breaking of wire or contact failure of thermistor wiring ④ Defective indoor controller board	①–③ Check resistance value of thermistor. 0℃ 15.0kΩ 10℃ 9.6kΩ 20℃ 6.3kΩ 30℃ 4.3kΩ 40℃ 3.0kΩ If you put force on (draw or bend) the lead wire with measuring resistance value of thermistor, breaking of wire or contact failure can be detected. ② Check contact failure of connector (CN20) on the indoor controller board. Refer to 10-6. Turn the power on again and check restart after inserting connector again. ④ Check room temperature display on remote controller. Replace indoor controller board if there is abnormal difference with actual room temperature. Turn the power off, and on again to operate after check.
P2	**Pipe temperature thermistor/Liquid (TH2)** ① The unit is in 3-minute resume prevention mode if short/open of thermistor is detected. Abnormal if the unit does not reset normally after 3 minutes. (The unit returns to normal operation, if it has been reset normally.) ② Constantly detected during cooling, drying, and heating (except defrosting) operation Short: 90℃ or more Open: -40℃ or less	①Defective thermistor characteristics ②Contact failure of connector (CN44) on the indoor controller board (Insert failure) ③Breaking of wire or contact failure of thermistor wiring ④Defective refrigerant circuit is causing thermistor temperature of 90℃ or more or -40℃ or less. ⑤Defective indoor controller board	①–③ Check resistance value of thermistor. For characteristics, refer to (P1) above. ② Check contact failure of connector (CN44) on the indoor controller board. Refer to 10-6. Turn the power on and check restart after inserting connector again. ④ Check pipe <liquid> temperature with remote controller in test run mode. If pipe <liquid> temperature is extremely low (in cooling mode) or high (in heating mode), refrigerant circuit may have defective. ⑤ Check pipe <liquid> temperature with remote controller in test run mode. If there is extremely difference with actual pipe <liquid> temperature, replace indoor controller board. Turn the power off, and on again to operate after check.
P4	**Drain sensor (DS)** ① Suspensive abnormality, if short/open of thermistor is detected for 30 seconds continuously.Compressor and indoor fan will be turned off ② Short/open is detected for 30 seconds continuously during suspensive abnormality. (The unit returns to normal operation, if it has normally reset.) ③ Detect the following condition. • During cooling and drying operation. • In case that pipe <liquid> temperature - room temperature <-10deg (Except defrosting) • When pipe <liquid> temperature or room temperature is short/open temperature. • During drain pomp operation.	① Defective thermistor characteristics ② Contact failure of connector (CN31) on the indoor controller board. (Insert failure). ③ Breaking of wire or contact failure of drain sensor wiring. ④ Defective indoor controller board.	①–③ Check resistance value of thermistor. 0℃……6.0kΩ 10℃····3.9kΩ 20℃····2.6kΩ 30℃····1.8kΩ 40℃····1.3kΩ ② Check contact failure of connector (CN31) on the indoor controller board. Refer to 10-6. Turn the power on again and check restart after inserting connector again. ④ Replace indoor controller board if drain pump operates with the line of drain sensor connector CN31-① and ② is short-circuited, and abnormality reappears. Turn the power off, and on again to operate after check.
P5	**Malfunction of drain pump (DP)** ① Suspensive abnormality, if thermistor of drain sensor is let heat itself and temperature rises slightly. Compressor and indoor fan will be turned off. ② Drain pomp is abnormal if the condition above is detected during suspensive abnormality. ③ Constantly detected during drain pump operation.	① Malfunction of drain pump ② Defective drain Clogged drain pump Clogged drain pipe ③ Attached drop of water at the drain sensor • Drops of drain trickles from lead wire. • Clogged filter is causing wave of drain. ④ Defective indoor controller board.	① Check if drain-up machine works. ② Check drain function. ③ Check the setting of lead wire of drain sensor and check clogs of the filter. ④ Replace indoor controller board if drain pump operates with the line of drain sensor connector CN31-① and ② is short-circuited and abnormality reappears. Refer to 10-6. Turn the power off, and on again to operate after check.

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Error Code	Abnormal point and detection method	Cause	Countermeasure
P6	**Freezing/overheating protection is working** ① Freezing protection (Cooling mode) The unit is in 6-minute resume prevention mode if pipe <liquid or condenser/ evaporator> temperature stays under -15℃ for 3 minutes, 3 minutes after the compressor started. Abnormal if it stays under -15℃ for 3 minutes again within 16 minutes after 6-minute resume prevention mode. ② Overheating protection (Heating mode) The units is in 6 minute resume prevention mode if pipe <condenser / evaporator> temperature is detected as over 70℃ after the compressor started. Abnormal if the temperature of over 70℃ is detected again within 30 minutes after 6 minute resume prevention mode.	(Cooling or drying mode) ① Clogged filter (reduced airflow) ② Short cycle of air path ③ Low-load (low temperature) operation out of the tolerance range ④ Defective indoor fan motor • Fan motor is defective. • Indoor controller board is defective. ⑤ Defective outdoor fan control ⑥ Overcharge of refrigerant ⑦ Defective refrigerant circuit (clogs) (Heating mode) ① Clogged filter (reduced airflow) ② Short cycle of air path ③ Over-load (high temperature) operation out of the tolerance range ④ Defective indoor fan motor • Fan motor is defective. • Indoor controller board is defective. ⑤ Defective outdoor fan control ⑥ Overcharge of refrigerant ⑦ Defective refrigerant circuit (clogs) ⑧ Bypass circuit of outdoor unit is defective.	(Cooling or drying mode) ① Check clogs of the filter. ② Remove shields. ④ Refer to 10-6. ⑤ Check outdoor fan motor. ⑥⑦ Check operating condition of refrigerant circuit. (Heating mode) ① Check clogs of the filter. ② Remove shields. ④ Refer to 10-6. ⑤ Check outdoor fan motor. ⑥~⑧Check operating condition of refrigerant circuit.
P8	**Pipe temperature** <Cooling mode> Detected as abnormal when the pipe temperature is not in the cooling range 3 minutes after compressor start and 6 minutes after the liquid or condenser/evaporator pipe is out of cooling range. Note 1) It takes at least 9 minutes to detect. Note 2) Abnormality P8 is not detected in drying mode. Cooling range : -3 °C ≦ (TH-TH1) TH: Lower temperature between: liquid pipe temperature (TH2) and condenser/evaporator temperature (TH5) TH1: Intake temperature <Heating mode> When 10 seconds have passed after the compressor starts operation and the hot adjustment mode has finished, the unit is detected as abnormal when condenser/ evaporator pipe temperature is not in heating range within 20 minutes. Note 3) It takes at least 27 minutes to detect abnormality. Note 4) It excludes the period of defrosting. (Detection restarts when defrosting mode is over.) Heating range : 3 °C ≦ (TH5-TH1)	① Slight temperature difference between indoor room temperature and pipe <liquid or condenser / evaporator> temperature thermistor • Shortage of refrigerant • Disconnected holder of pipe <liquid or condenser / evaporator> thermistor • Defective refrigerant circuit ② Converse connection of extension pipe (on plural units connection) ③ Converse wiring of indoor/ outdoor unit connecting wire (on plural units connection) ④ Defective detection of indoor room temperature and pipe <condenser / evaporator> temperature thermistor ⑤ Stop valve is not opened completely.	①~④ Check pipe <liquid or condenser / evaporator> temperature with room temperature display on remote controller and outdoor controller circuit board. Pipe <liquid or condenser / evaporator> temperature display is indicated by setting SW2 of outdoor controller circuit board as follows. (Conduct temperature check with outdoor controller circuit board after connecting 'A-Control Service Tool(PAC-SK52ST)'.) ②③Check converse connection of extension pipe or converse wiring of indoor/outdoor unit connecting wire.

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Error Code	Abnormal point and detection method	Cause	Countermeasure
P9	**Pipe temperature thermistor / Condenser-Evaporator (TH5)** ① The unit is in 3-minute resume protection mode if short/open of thermistor is detected. Abnormal if the unit does not get back to normal within 3 minutes. (The unit returns to normal operation, if it has been reset normally.) ② Constantly detected during cooling, drying, and heating operation (except defrosting) Short: 90℃ or more Open: -40℃ or less	① Defective thermistor characteristics ② Contact failure of connector (CN44) on the indoor controller board (Insert failure) ③ Breaking of wire or contact failure of thermistor wiring ④ Temperature of thermistor is 90℃ or more or -40℃ or less caused by defective refrigerant circuit. ⑤ Defective indoor controller board	①–③ Check resistance value of thermistor. For characteristics, refer to (P1) above. ② Check contact failure of connector (CN44) on the indoor controller board. Refer to 10-7. Turn the power on and check restart after inserting connector again. ④ Operate in test run mode and check pipe <condenser / evaporator> temperature with outdoor controller circuit board. If pipe <condenser / evaporator> temperature is extremely low (in cooling mode) or high (in heating mode), refrigerant circuit may have defect. ⑤ Operate in test run mode and check pipe <condenser / evaporator> temperature with outdoor control circuit board. If there is extreme difference with actual pipe <condenser / evaporator> temperature, replace indoor controller board. There is no abnormality if none of above comes within the unit. Turn the power off and on again to operate. (In case of checking pipe temperature with outdoor controller circuit board, be sure to connect A-control service tool (PAC-SK52ST).)
E0 or E4	**Remote controller transmission error(E0)/signal receiving error(E4)** ① Abnormal if main or sub remote controller cannot receive any transmission normally from indoor unit of refrigerant address “0” for 3 minutes. (Error code : E0) ② Abnormal if sub remote controller could not receive any signal for 2 minutes. (Error code: E0) ① Abnormal if indoor controller board can not receive any data normally from remote controller board or from other indoor controller board for 3 minutes. (Error code: E4) ② Indoor controller board cannot receive any signal from remote controller for 2 minutes. (Error code: E4)	① Contact failure at transmission wire of remote controller ② All remote controllers are set as “sub” remote controller. In this case, E0 is displayed on remote controller, and E4 is displayed at LED (LED1, LED2) on the outdoor controller circuit board. ③ Miswiring of remote controller ④ Defective transmitting receiving circuit of remote controller ⑤ Defective transmitting receiving circuit of indoor controller board of refrigerant addresses “0”. ⑥ Noise has entered into the transmission wire of remote controller.	① Check disconnection or looseness of indoor unit or transmission wire of remote controller. ② Set one of the remote controllers “main” if there is no problem with the action above. ③ Check wiring of remote controller. • Total wiring length: max. 500m (Do not use cable x 3 or more.) • The number of connecting indoor units: max. 16 units • The number of connecting remote controller: max. 2 units When it is not the above-mentioned problem of ①~③ ④ Diagnose remote controllers. a) When “RC OK” is displayed, Remote controllers have no problem. Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board. b) When “RC NG” is displayed, Replace remote controller. c)When “RC E3” or “ERC 00-66” is displayed, noise may be causing abnormality. * If the unit is not normal after replacing indoor controller board in group control, indoor controller board of address “0” may be abnormal.
E3 or E5	**Remote controller transmission error(E3)/signal receiving error(E5)** ① Abnormal if remote controller could not find blank of transmission path for 6 seconds and could not transmit. (Error code: E3) ② Remote controller receives transmitted data at the same time and compares the received and transmitted data. Abnormal if these data are judged to be different 30 continuous times. (Error code: E3) ① Abnormal if indoor controller board could not find blank of transmission path. (Error code: E5) ② Indoor controller board receives transmitted data at the same time and compares the received and transmitted data. Abnormal if these data are judged to be different 30 continuous times. (Error code: E5)	① 2 remote controllers are set as “main.” (In case of 2 remote controllers) ② Remote controller is connected with 2 indoor units or more. ③ Repetition of refrigerant address ④ Defective transmitting receiving circuit of remote controller ⑤ Defective transmitting receiving circuit of indoor controller board ⑥ Noise has entered into transmission wire of remote controller.	① Set a remote controller to main, and the other to sub. ② Remote controller is connected with only one indoor unit. ③ The address changes to a separate setting. ④~⑥ Diagnose remote controller. a) When “RC OK” is displayed, remote controllers have no problem. Turn the power off,and on again to check. When becoming abnormal again, replace indoor controller board. b)When “RC NG” is displayed, replace remote controller. c)When “RC E3” or “ERC 00-66” is displayed, noise may be causing abnormality.

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Error Code	Abnormal point and detection method	Cause	Countermeasure
E6	**Indoor/outdoor unit communication error (Signal receiving error)** ① Abnormal if indoor controller board cannot receive any signal normally for 6 minutes after turning the power on. ② Abnormal if indoor controller board cannot receive any signal normally for 3 minutes. ③ Consider the unit abnormal under the following condition: When 2 or more indoor units are connected to an outdoor unit, indoor controller board cannot receive a signal for 3 minutes from outdoor controller circuit board, a signal which allows outdoor controller circuit board to transmit signals.	① Contact failure, short circuit or, miswiring (converse wiring) of indoor/outdoor unit connecting wire ② Defective transmitting receiving circuit of indoor controller board ③ Defective transmitting receiving circuit of indoor controller board ④ Noise has entered into indoor/ outdoor unit connecting wire.	* Check LED display on the outdoor control circuit board. (Connect A-control service tool, PAC-SK52ST.) Refer to outdoor unit service manual. ① Check disconnection or looseness of indoor/ outdoor unit connecting wire of indoor unit or outdoor unit. Check all the units in case of twin triple indoor unit system. ②-④ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board or outdoor controller circuit board. * Other indoor controller board may have defect in case of twin triple indoor unit system.
E7	**Indoor/outdoor unit communication error (Transmitting error)** Abnormal if "1" receiving is detected 30 times continuously though indoor controller board has transmitted "0".	① Defective transmitting receiving circuit of indoor controller board ② Noise has entered into power supply. ③ Noise has entered into outdoor control wire.	①-③ Turn the power off, and on again to check. If abnormality generates again, replace indoor controller board.
Fb	**Indoor controller board** Abnormal if data cannot be read normally from the nonvolatile memory of the indoor controller board.	① Defective indoor controller board	① Replace indoor controller board.
E1 or E2	**Remote controller control board** ① Abnormal if data cannot be read normally from the nonvolatile memory of the remote controller control board. (Error code: E1) ② Abnormal if the clock function of remote controller cannot be operated normally. (Error code: E2)	① Defective remote controller	① Replace remote controller.
PA	**Forced compressor stop (due to water leakage abnormality)** ① When the intake temperature subtracted with liquid pipe temperature is less than -10℃, drain sensor is detected whether it is soaked in the water or not at the interval of 90 seconds. (Drain pump will start operating when the drain sensor is detected to be soaked in the water.) ② The unit has a water leakage abnormality when the following conditions, a and b, are satisfied while the above-mentioned detection is performed. a) The drain sensor is detected to be soaked in the water 10 times in a row. b) The intake temperature subtracted with liquid pipe temperature is detected to be less than -10℃ for a total of 30 minutes. (When the drain sensor is detected to be NOT soaked in the water, the detection record of a and b will be cleared.) ③ The drain sensor detection is performed in operations other than cooling. (When the unit stops operating, during heating or fan operation, when the unit stops because of some abnormality) *Once the water leakage abnormality is detected, abnormality state will not be released until the main power is reset.	① Drain pump trouble ② Drain defective · Drain pump clogging · Drain pipe clogging ③ Open circuit of drain sensor side heater ④ Contact failure of drain sensor connector ⑤ Dew condensation on drain sensor · Drain water descends along lead wire. · Drain water waving due to filter clogging. ⑥ Extension piping connection difference at twin, triple, quadruple system. ⑦ Mis-wiring of indoor/ outdoor connecting at twin, triple, quadruple system. ⑧ Room temperature thermistor / liquid pipe temperature thermistor detection is defective.	① Check the drain pump. ② Please confirm whether water can be drained. ③ Confirm the resistance of the drain sensor. ④ Check the connector contact failure. ⑤ Check the drain sensor leadwire mounted. Check the filter clogging ⑥ Check the piping connection. ⑦ Check the indoor/ outdoor connecting wires. ⑧ Check the room temperature display of remote controller. Check the indoor liquid pipe temperature display of outdoor controller board.

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10-3. TROUBLESHOOTING BY INFERIOR PHENOMENA

Note: Refer to the manual of outdoor unit for the detail of remote controller.

Phenomena	Cause	Countermeasure
(1)LED2 on indoor controller board is off.	• When LED1 on indoor controller board is also off. ① Power supply of rated voltage is not supplied to outdoor unit.	① Check the voltage of outdoor power supply terminal block (L, N) or (L3, N). • When AC 220~240V is not detected. Check the power wiring to outdoor unit and the breaker. • When AC 220~240V is detected. —Check ② (below).
	② Defective outdoor controller circuit board.	② Check the voltage between outdoor terminal block S1 and S2. • When AC 220~240V is not detected. Check the fuse on outdoor controller circuit board. Check the wiring connection. • When AC 220~240V is detected. —Check ③ (below).
	③ Power supply of 220~240V is not supplied to indoor unit.	③ Check the voltage between indoor terminal block S1 and S2. • When AC 220~240V is not detected. Check indoor/outdoor unit connecting wire for mis-wiring. • When AC 220~240V is detected. —Check ④ (below).
	④ Defective indoor power board.	④ Check voltage output from CN2S on indoor power board (DC13.1V). Refer to 10-6-1. • When no voltage is output. Check the wiring connection. • When output voltage is between DC12.5V and DC13.7V. —Check ⑤ (below).
	⑤ Defective indoor controller board.	⑤ Check the wiring connection between indoor controller board and indoor power board. Check the fuse on indoor controller board. If no problems are found, indoor controller board is defective.
	(For the separate indoor/outdoor unit power supply system) ① Power supply of 220~240V AC is not supplied to indoor unit.	① Check the voltage of indoor power supply terminal block (L,N). • When AC220~240V is not detected. Check the power supply wiring. • When AC220~240V is detected. -Check ② (below).
	② The connectors of the optional replacement kit are not used.	② Check that there is no problem in the method of connecting the connectors. • When there are problems in the method of connecting the connectors. Connect the connector correctly referring to installation manual of an optional kit. • When there is no problem in the method of connecting the connectors. -Check ③ (below).
	③ Defective indoor controller board.	③ Check voltage output from CNDK on indoor controller board. • When AC220~240V is not detected. Check the fuse on indoor controller board. Check the wiring connection between indoor power supply terminal block and CND on indoor controller board. • When AC220~240V is detected. -Check ④ (below).
	④ Defective indoor power board.	④ Check voltage output from CN2S on indoor power board. • When no voltage output. Check the wiring connection between CNDK on indoor controller board and CNSK on indoor power board. If no problem are found,indoor power board is defective. • When DC12.5~13.7V is detected. Check the wiring connection between CN2S on indoor power board and CN2D on indoor power board. If no problem are found,indoor controller board is defective.
	• When LED1 on indoor controller board is lit. ① Mis-setting of refrigerant address for outdoor unit (There is no unit corresponding to refrigerant address “0”.)	① Reconfirm the setting of refrigerant address for outdoor unit Set the refrigerant address to “0”. (For grouping control system under which 2 or more outdoor units are connected, set one of the units to “0”.) Set refrigerant address using SW1 (3-6) on outdoor controller circuit board.

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Note: Refer to the manual of outdoor unit for the detail of remote controller.

Phenomena	Cause	Countermeasure
(2)LED2 on indoor controller board is blinking.	• When LED1 on indoor controller board is also blinking. Connection failure of indoor/outdoor unit connecting wire	Check indoor/outdoor unit connecting wire for connection failure.
	• When LED1 is lit. ① Mis-wiring of remote controller wires Under twin triple indoor unit system, 2 or more indoor units are wired together. ② Refrigerant address for outdoor unit is wrong or not set. Under grouping control system, there are some units whose refrigerant address is 0. ③ Short-cut of remote controller wires ④ Defective remote controller	① Check the connection of remote controller wires in case of twin triple indoor unit system. When 2 or more indoor units are wired in one refrigerant system, connect remote controller wires to one of those units. ② Check the setting of refrigerant address in case of grouping control system. If there are some units whose refrigerant addresses are 0 in one group, set one of the units to 0 using SW1 (3-6) on outdoor controller circuit board. ③④ Remove remote controller wires and check LED2 on indoor controller board. • When LED2 is blinking, check the short-cut of remote controller wires. • When LED2 is lit, connect remote controller wires again and: if LED2 is blinking, remote controller is defective; if LED2 is lit, connection failure of remote controller terminal block etc. has returned to normal.
(3)Upward/downward vane performance failure	① The vane is not downward during defrosting and heat preparation and when the thermostat is OFF in HEAT mode. (Working of COOL protection function) ② Vane motor does not rotate. • Defective vane motor • Breaking of wire or connection failure of connector • Up/down vane setting is “No vanes”. ③ Upward/downward vane does not work. • The vane is set to fixed position.	① Normal operation (The vane is set to horizontal regardless of remote control.) ② Check ② (left). • Check the vane motor. (Refer to “How to check the parts”.) • Check for breaking of wire or connection failure of connector. • Check “Up/down vane setting”. (Unit function selection by remote controller). ③ Normal operation (Each connector on vane motor side is disconnected.)
(4)Receiver for wireless remote controller	① Weak batteries of wireless remote controller. ② Contact failure of connector (CNB) on wireless remote controller board. (Insert failure) ③ Contact failure of connector (CN90) on indoor controller board.(Insert failure) ④ Contact failure of connector between wireless remote controller board and indoor controller board.	① Replace batteries of wireless remote controller. ②~④ Check contact failure of each connector. If no problems are found of connector, replace indoor controller board. When the same trouble occurs even if indoor controller board is replaced, replace wireless remote controller board.

10-4. WHEN WIRED REMOTE CONTROLLER OR INDOOR UNIT MICRO COMPUTER TROUBLES

1. If there is not any other wrong when trouble occurs, emergency operation starts as the indoor controller board switch (SWE) is set to ON.
   During the emergency operation the indoor unit is as follows;
   Indoor fan high speed operation

2. When emergency operating for COOL or HEAT, setting of the switch (SWE) on the indoor controller board and outdoor unit emergency operation are necessary.

3. Check items and notices as the emergency operation
   (1) Emergency operation cannot be used as follows;
   • When the outdoor unit is something wrong.
   • When the indoor fan is something wrong.
   • When drain over flow protected operation is detected during self-diagnosis. (Error code : P5)
   (2) Emergency operation will be serial operation by the power supply ON/OFF.
   ON/OFF or temperature, etc. adjustment is not operated by the remote controller.
   (3) Do not operate for a long time as cold air is blown when the outdoor unit starts defrosting operation during heat emergency operation.
   (4) Cool emergency operation must be within 10 hours. Other wire, heat exchanger of indoor unit may get frosted.
   (5) After completing the emergency operation, return the switch setting, etc. in former state.
   (6) Since vane does not work at emergency operation, position the vane slowly by hand.

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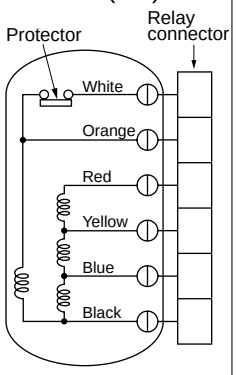
10-5. HOW TO CHECK THE PARTS

PCA-RP71HA PCA-RP71HA#1
PCA-RP125HA PCA-RP125HA#1

<table>
<tr><th>Parts name</th><th>Check points</th></tr>
<tr><td>Room temperature thermistor (TH1)
Pipe temperature thermistor (TH2)
Condenser/Evaporator temperature thermistor (TH5)</td><td>Disconnect the connector then measure the resistance with a tester.
(At the ambient temperature 10℃~30℃)
<table><tr><th>Normal</th><th>Abnormal</th></tr><tr><td>4.3kΩ~9.6kΩ</td><td>Open or short</td></tr></table>(Refer to <Thermistor Characteristic graph> for a detail.)</td></tr>
<tr><td>Fan motor(MF)
 
</td><td>Measure the resistance between the terminals with a tester.
(Winding temperature 20℃)
<table><tr><th rowspan="2">Connector</th><th colspan="2">Normal</th><th rowspan="2">Abnormal</th></tr><tr><th>PCA-RP71</th><th>PCA-RP125</th></tr><tr><td>White–Black</td><td>140.5Ω</td><td>75.6Ω</td><td rowspan="4">Open or short</td></tr><tr><td>Black–Blue</td><td>15.4Ω</td><td>36.7Ω</td></tr><tr><td>Blue–Yellow</td><td>28.5Ω</td><td>23.6Ω</td></tr><tr><td>Yellow–Red</td><td>80.4Ω</td><td>47.8Ω</td></tr></table>Protector
OPEN : 135±5℃
CLOSE : 95±15℃</td></tr>
</table>

<Thermistor Characteristic graph>

Thermistor for lower temperature

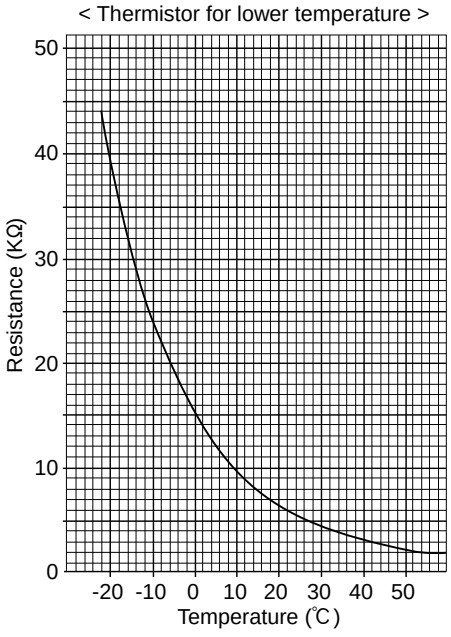
Room temperature thermistor(TH1)
Pipe temperature thermistor(TH2)
Condenser/evaporator temperature thermistor(TH5)

Thermistor R_0=15k ± 3%
Fixed number of B=3480k ± 2%

$$Rt = 15\exp\left\{3480\left(\frac{1}{273+t} - \frac{1}{273}\right)\right\}$$

0℃	15k
10℃	9.6k
20℃	6.3k
25℃	5.4k
30℃	4.3k
40℃	3.0k

< Thermistor for lower temperature >



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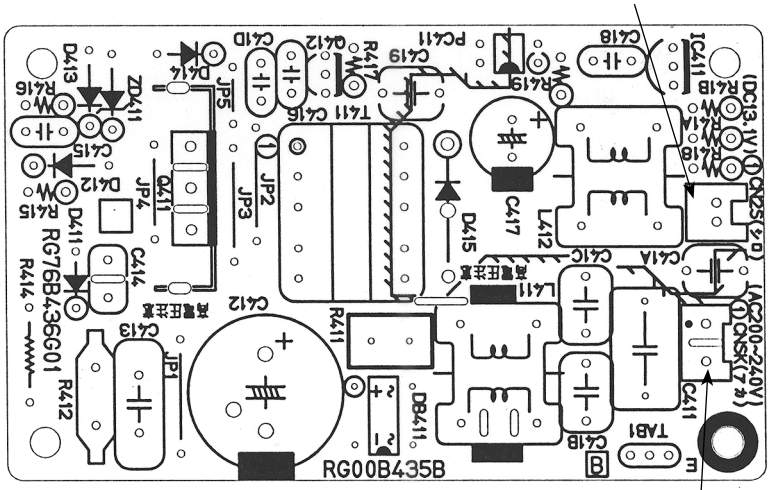
10-6. TEST POINT DIAGRAM

10-6-1. Power board

PCA-RP71HA **PCA-RP71HA#1**
PCA-RP125HA **PCA-RP125HA#1**



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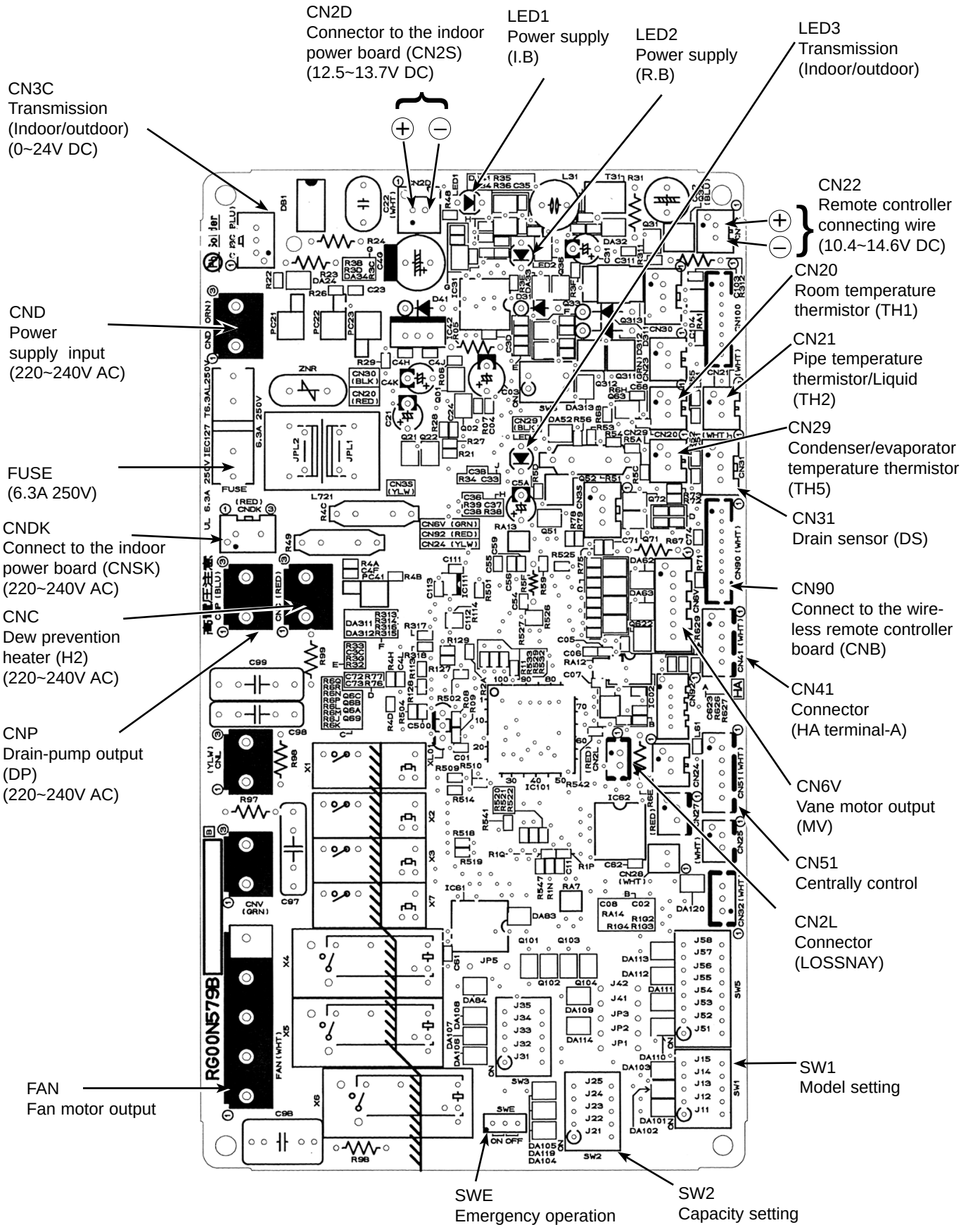
10-6-2. Indoor controller board

PCA-RP71HA PCA-RP71HA#1
PCA-RP125HA PCA-RP125HA#1



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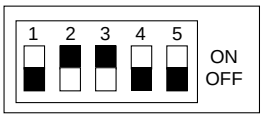
10-7. FUNCTIONS OF DIP SWITCH AND JUMPER WIRE

Each function is controlled by the dip switch and the jumper wire on control p.c. board.
SW1 and SW2 are equipped only for service parts.
Model setting and capacity setting are memorized in the nonvolatile memory of the control p.c. board of the unit.

(Marks in the table below) Jumper wire (○ : Short × : Open)

<table>
<tr><th>Jumper wire</th><th>Functions</th><th>Setting by the dip switch and jumper wire</th><th>Remarks</th></tr>
<tr><td>SW1</td><td>Model settings</td><td>For service board
 
</td><td></td></tr>
<tr><td>SW2</td><td>Capacity settings</td><td>
<table>
<tr><th>MODELS</th><th>Service board</th></tr>
<tr><td>PCA-RP71HA</td><td>
</td></tr>
<tr><td>PCA-RP125HA</td><td>
</td></tr>
</table>
</td><td></td></tr>
<tr><td>J41
J42</td><td>Pair number setting with wireless remote controller</td><td>
<table>
<tr><th rowspan="2">Wireless remote controller setting</th><th colspan="2">Control PCB setting</th></tr>
<tr><th>J41</th><th>J42</th></tr>
<tr><td>0</td><td>○</td><td>○</td></tr>
<tr><td>1</td><td>×</td><td>○</td></tr>
<tr><td>2</td><td>○</td><td>×</td></tr>
<tr><td>3 ~ 9</td><td>×</td><td>×</td></tr>
</table>
</td><td><Initial setting>
Wireless remote controller: 0
Control PCB: ○ (for both J41 and J42)
Four pair number settings are supported.
The pair number settings of the wireless remote controller and indoor control PCB (J41/J42) are given in the table on the left.
('×' in the table indicates the jumper line is disconnected.)</td></tr>
<tr><td>JP1</td><td>Unit type setting</td><td>
<table>
<tr><th>Model</th><th>JP1</th></tr>
<tr><td>Without TH5</td><td>○</td></tr>
<tr><td>With TH5</td><td>×</td></tr>
</table>
</td><td>There is no jumper (JP1) because these models have the cond./eva. temperature thermistor (TH5).</td></tr>
<tr><td>JP3</td><td>Indoor controller board type setting</td><td>
<table>
<tr><th>Indoor controller board type</th><th>JP3</th></tr>
<tr><td>For product</td><td>×</td></tr>
<tr><td>Service parts</td><td>○</td></tr>
</table>
</td><td></td></tr>
</table>

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11 SPECIAL FUNCTION

11-1. ROTATION FUNCTION(AND BACK-UP FUNCTION, 2ND STAGE CUT-IN FUNCTION)

For PCA-RP71/125HA#1

11-1-1. Operation

(1) Rotation function (and Back-up function)

• Outline of functions

· Main and sub unit operate alternately according to the interval of rotation setting.

※ Main and sub unit should be set by refrigerant address.(Outdoor Dip switch setting)

Refrigerant address"00" ⟶ Main unit

Refrigerant address"01" ⟶ Sub unit

· When error occurrs to one unit, another unit will start operation.(Back-up function)

• System constraint

· This function is available only by the grouping control system(INDOOR UNIT : OUTDOOR UNIT=1:1) of 2 refrigerant groups.(Refer to Fig. 1)

· Main indoor unit should be connected for wired remote controller and the transmission line(TB5) for main and sub unit should also be connected. (Refer to Fig. 1)
(This function cannot be set by wireless remote controller.)

· Set refrigerant address of each unit.(Dip switch on the outdoor unit···Refrigerant address 00/01)

Operation pattern

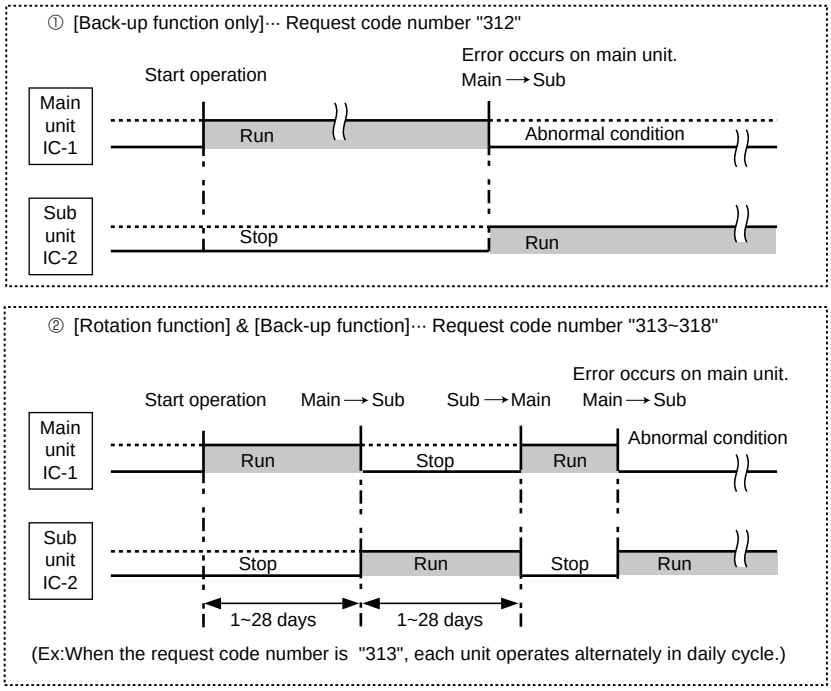
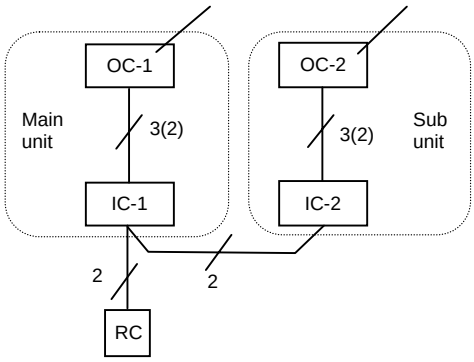


Fig. 1



OC : Outdoor unit
IC : Indoor unit
RC : Wired remote controller

Note:

· When the uint is restarted to operate after turning off the power or OFF operation, the unit which was operating will start operation.

· To operate the main unit, refer to the 11-1-2. and set the requet code No. which is not the same as the current one, and set again the former request code No.

(2) 2nd stage cut-in function

Outline of functions

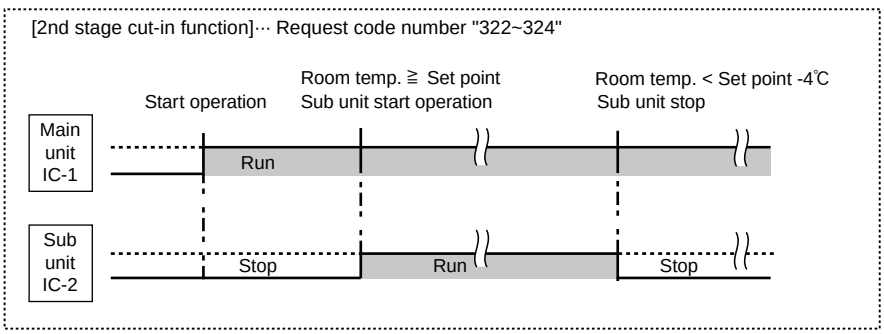
· Number of operating units is determined according to the room temperature and set point.

· When room temperature becomes higher than set point, standby unit starts.(2 units operation)

· When room temperature falls below set point -4℃, standby unit stops.(1 unit operation)

System constraint

· This function is available only in rotation operation and back-up function in cooling mode.



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11-1-2. How to set rotation function(Back-up function, 2nd stage cut-in function)
You can set these functions by wired remote controller.(Maintenance monitor)

NOTICE

Both main and sub unit should be set in same setting.
Every time replacing indoor controller board for servicing, the function should be set again.

(1) Request Code List

Rotation setting

Setting No. (Request code)	Setting contents	Initial setting
No.1 (310)	Monitoring the request code of current setting.	
No.2 (311)	Rotation and Back-up OFF (Normal group control operation)	◎
No.3 (312)	Back-up function only	
No.4 (313)	Rotation ON (Alternating interval = 1day) and back up function	
No.5 (314)	Rotation ON (Alternating interval = 3day) and back up function	
No.6 (315)	Rotation ON (Alternating interval = 5day) and back up function	
No.7 (316)	Rotation ON (Alternating interval = 7day) and back up function	
No.8 (317)	Rotation ON (Alternating interval = 14day) and back up function	
No.9 (318)	Rotation ON (Alternating interval = 28day) and back up function	

2nd stage cut-in setting

Setting No. (Request code)	Setting contents	Initial setting
No.1 (320)	Monitoring the request code of current setting.	
No.2 (321)	Cut-in function OFF	◎
No.3 (322)	Cut-in Function ON(Set point = Set temp.+ 4°C(7.2°F))	
No.4 (323)	Cut-in Function ON(Set point = Set temp.+ 6°C(10.8°F))	
No.5 (324)	Cut-in Function ON(Set point = Set temp.+ 8°C(14.4°F))	

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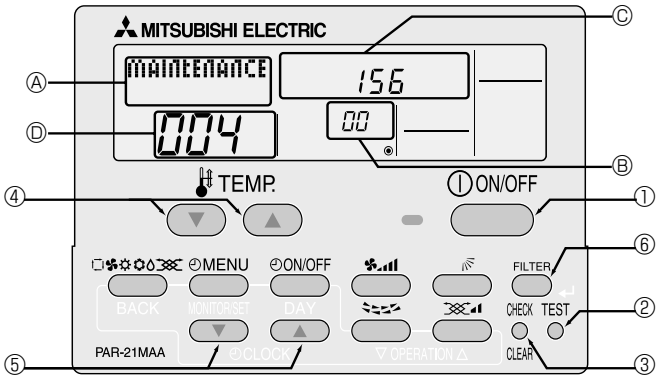
(2) Setting method of each function by wired remote controller



B: Refrigerant address
C: Data display area
D: Request code display area

1. Stop operation(①).

2. Press the TEST button (②) for 3 seconds so that [Maintenance mode] appears on the screen (Ⓐ).
   After a while, [00] appears in the refrigerant address number display area.(at Ⓑ)

3. Press the CHECK button (③) for 3 seconds to switch to [Maintenance monitor].
   Note) It is not possible to switch to [Maintenance monitor] during data request in maintenance mode
   (i.e., while "----" is blinking) since no buttons are operative.

   [----] appears on the screen (Ⓓ) when [Maintenance monitor] is activated.
   (The display (Ⓓ) now allows you to set a request code No.)

4. Press the [TEMP (▽ and △)] buttons (④) to select the desired refrigerant address.

   [ScreenB]

5. Press the [CLOCK (▽ and △)] buttons (⑤) to set the desired request code No.("311~318", "321~324")

6. Press the FILTER button (⑥) to perform function setting.
   If above setting operations are done correctly, "Request code number will appear in data display area.(Ⓒ)
   [Example: When the "311" of "Request code number" is set, [311] appears on the screen.(Ⓒ)]

[Refererence]
You can check current "request code number" setting by setting the "request code number"("310" or "320") and pressing the FILTER button.(⑥)
[Example: When the current setting is "Setting No.2(Request code 311)", [311] appears on the screen.(Ⓒ)]

7. To return to normal mode, press the ON/OFF button (①).

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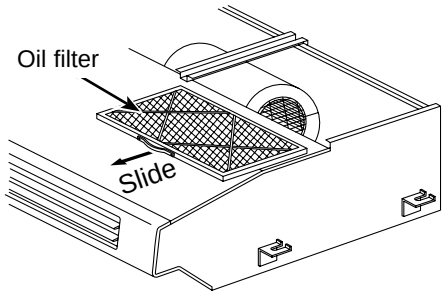
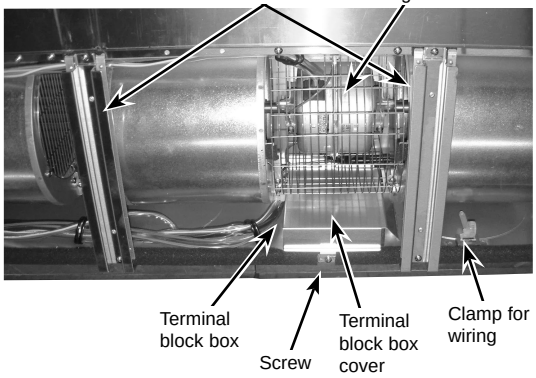
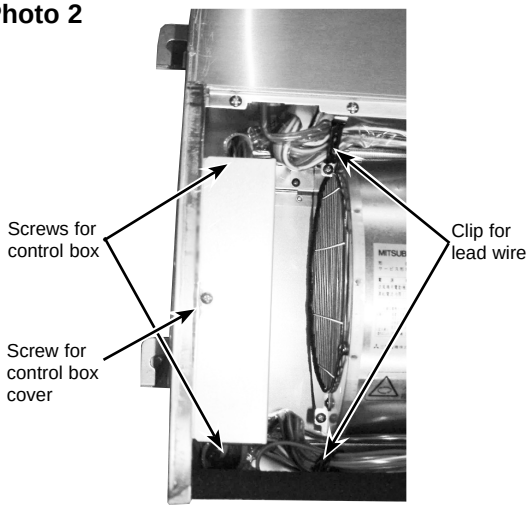
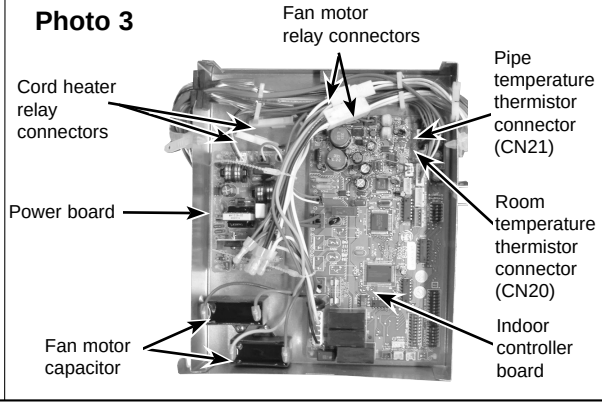
12 DISASSEMBLY PROCEDURE

PCA-RP71HA PCA-RP125HA
PCA-RP71HA#1 PCA-RP125HA#1

OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
1. Removing the oil filter (1) Slide the oil filter towards you to remove. (See figure 1.)	**Figure 1** 
2. Removing the terminal block box cover (1) Remove the oil filter. (See figure 1.) (2) Remove a screw for terminal block box cover, and remove the terminal block box cover. (See photo 1.)	**Photo 1** 
3. Removing the control box (1) Remove the oil filter. (See figure 1.) (2) Loosen the screw for control box cover to remove the control box cover. (See photo 2.) (3) Remove the lead wire from the 2 clips. (4) Remove the 2 white cord heater relay connectors (1P × 2) and 2 fan motor relay connectors (6P × 2) in the control box. (5) Remove the 2 screws for control box to slide the control box downward. Electrical parts in the control box • Fan motor capacitor • Indoor controller board • Power board	**Photo 2**  **Photo 3** 

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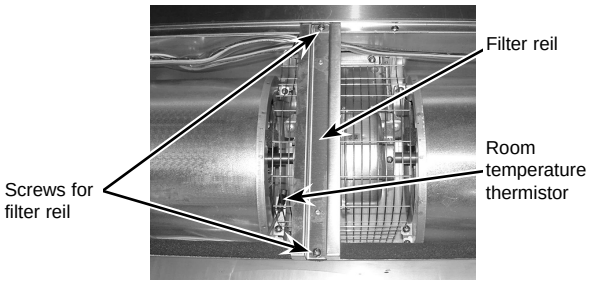
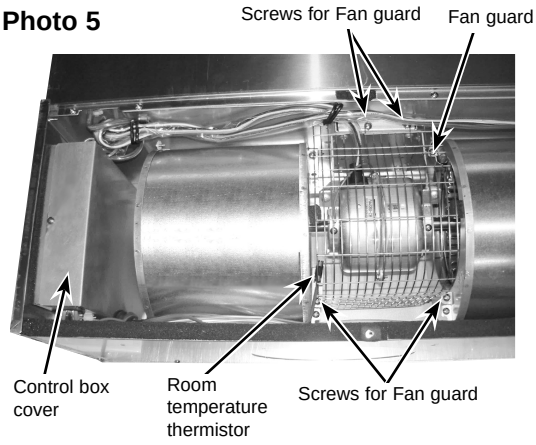
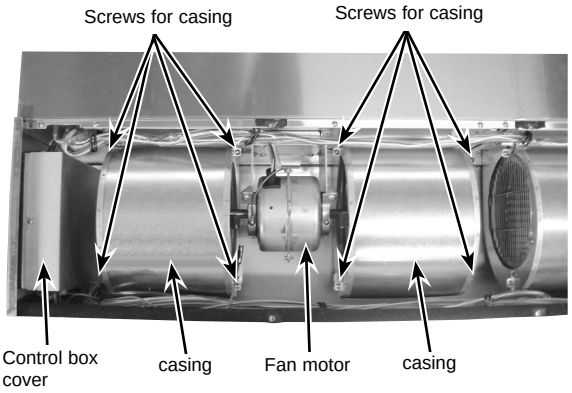
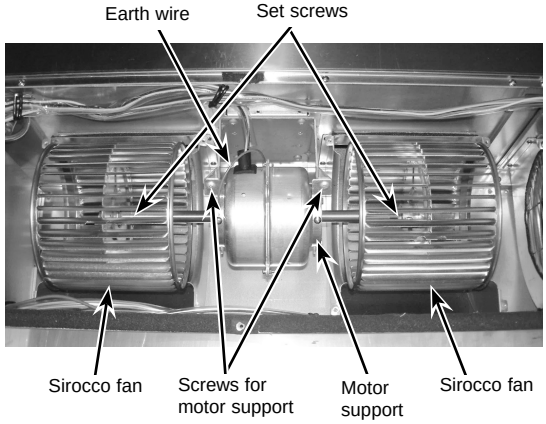
OPERATING PROCEDURE	PHOTOS&ILLUSTRATIONS
4. Removing the fan motor (1) Remove the oil filter. (See figure 1.) (2) Remove the control box cover. (See photo 2.) (3) Remove the room temperature thermistor connector (CN20) on the indoor controller board. (See photo 3.) (4) Remove a filter rail that is the nearest to the control box. (See photo 4.) (5) Remove the fan guard. (See photo 5.) (6) Remove the room temperature thermistor together with the holder at the right side of the casing.	**Photo 4**  **Photo 5** 
5. Removing the fan motor and the sirocco fan (1) Remove the oil filter. (See figure 1.) (2) Remove the control box cover. (See photo 2.) (3) Remove the fan motor relay connectors (6P) in the control box. (See photo 3.) (4) Remove the 3 filter rails. (See photo 1, 4.) (5) Remove the fan guard. (See photo 5.) (6) Remove the lower casing. (See photo 6.) (7) Remove the green earth wire from the motor support. (See photo 7.) (8) Remove the 2 screws (M5 × 12) for motor support, and remove the left and right motor supports. (9) Remove the fan motor together with the sirocco fan. (10) Remove the 2 set screws (M6) to separate the fan motor from the sirocco fan.	**Photo 6**  **Photo 7** 

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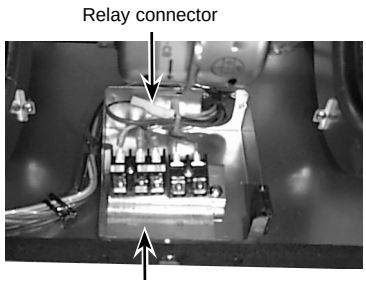
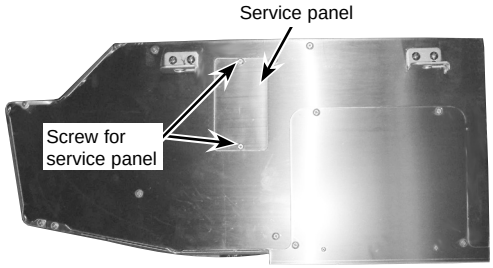
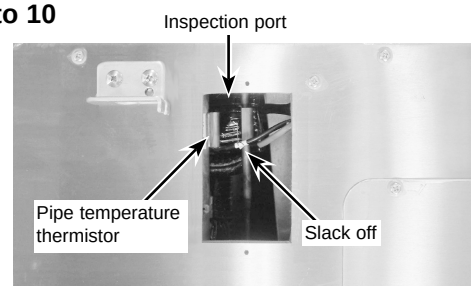
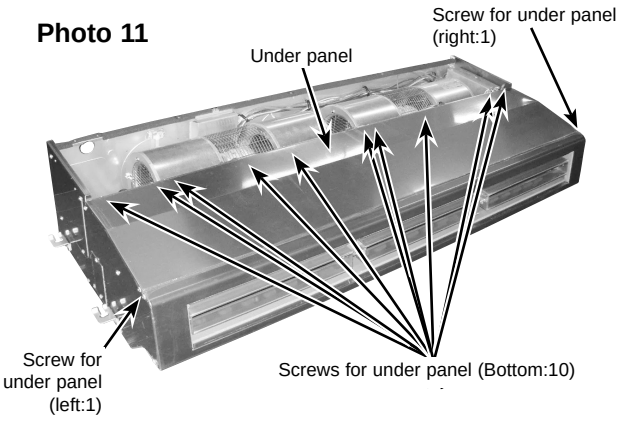
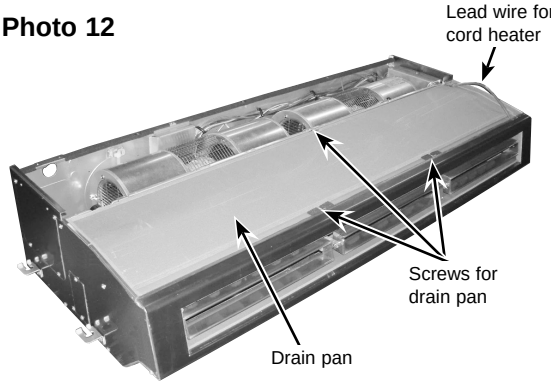
OPERATING PROCEDURE	PHOTOS
6. Removing the pipe temperature thermistor (1) Remove the oil filter. (See figure 1.) (2) Remove the fan guard. (See photo 1.) (3) Remove the terminal block box cover. (4) Remove the white relay connector (2P) in the terminal block box. (See photo 8.) (5) Remove the service panel. (See photo 9.) (6) Remove the pipe temperature thermistor from the holder. (See photo 10.) **Caution for installation** When installing the pipe temperature thermistor, slack off its lead wire as shown in the photo. Otherwise, water trickled down the lead wire may splash on the connector and this could cause a short circuit of the connector.	**Photo 8**  **Photo 9**  **Photo 10** 
7. Removing the under panel (1) Remove the oil filter. (See figure 1.) (2) Remove the 3 filter rails. (See photo 1, 4.) (3) Remove the 12 screws (left: 1, right: 1, Bottom: 10) for under panel, and remove the under panel. (See photo 11.)	**Photo 11** 
8. Removing the drain pan (1) Remove the oil filter. (See Figure 1) (2) Remove the 3 filter rails. (See photo 1, 4.) (3) Remove the under panel. (See photo 11.) (4) Pull the blue lead wire for cord heater towards you to slack off. (See photo 12.) (5) Remove the 3 screws at the center of the drain pan, and remove the drain pan. (Note) Remove the drain pan carefully since the drain could remain in it.	**Photo 12** 

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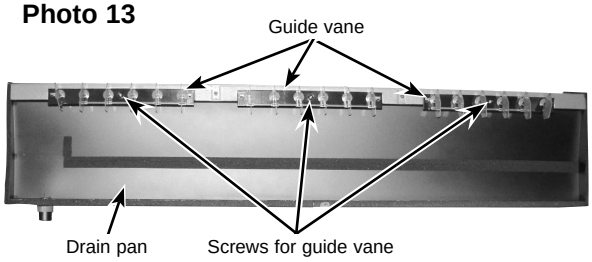
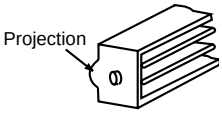
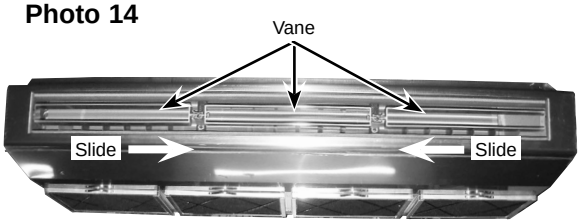
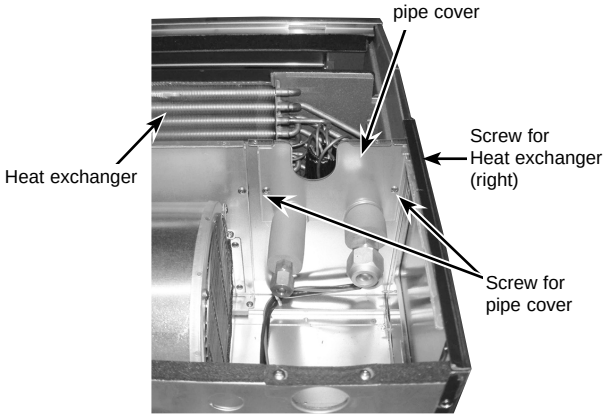
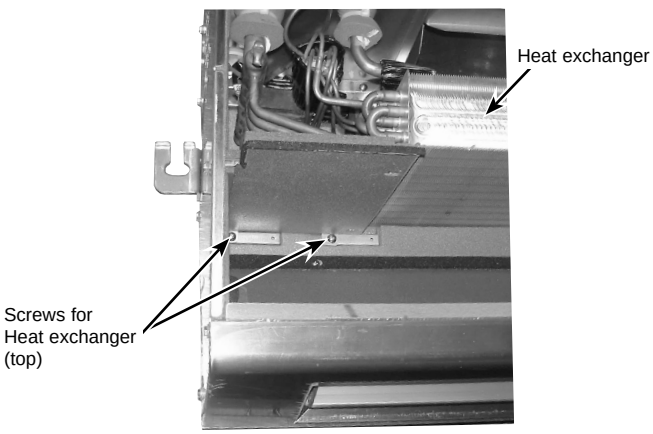
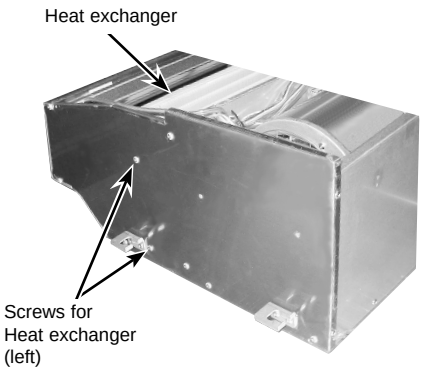
OPERATING PROCEDURE	PHOTOS
9. Removing the guide vane (1) Remove the oil filter. (See figure 1.) (2) Remove the 3 filter rails. (See photo 1, 4.) (3) Remove the under panel. (See photo 11.) (4) Remove the drain pan. (See photo 12.) (5) Remove the 3 screws (4 × 10) for guide vane, and remove the guide vane. (See photo 13.)	**Photo 13** 
10. Removing the vane (1) Slide the vane to the center of the unit, and pull it towards you to remove. (See photo 14.) **Caution for installation** When installing the vane, check that its projection is on the left-rear side.  	**Photo 14** 
11. Removing the heat exchanger (1) Remove the oil filter. (See figure 1.) (2) Remove the 3 filter rails. (See photo 1, 4.) (3) Remove the under panel. (See photo 11.) (4) Remove the drain pan. (See photo 12.) (5) Remove the 2 screws (4 × 10) for pipe cover, and remove the pipe cover. (See photo 15.) (6) Remove the 3 screws (4 × 10, left: 2, right: 1) for heat exchanger. (See photo 15, 16.) (7) Remove the 2 screws (4 × 10) for heat exchanger at the top of the unit, and remove the heat exchanger. (See photo 17.)	**Photo 15** 
Photo 17  	**Photo 16** 

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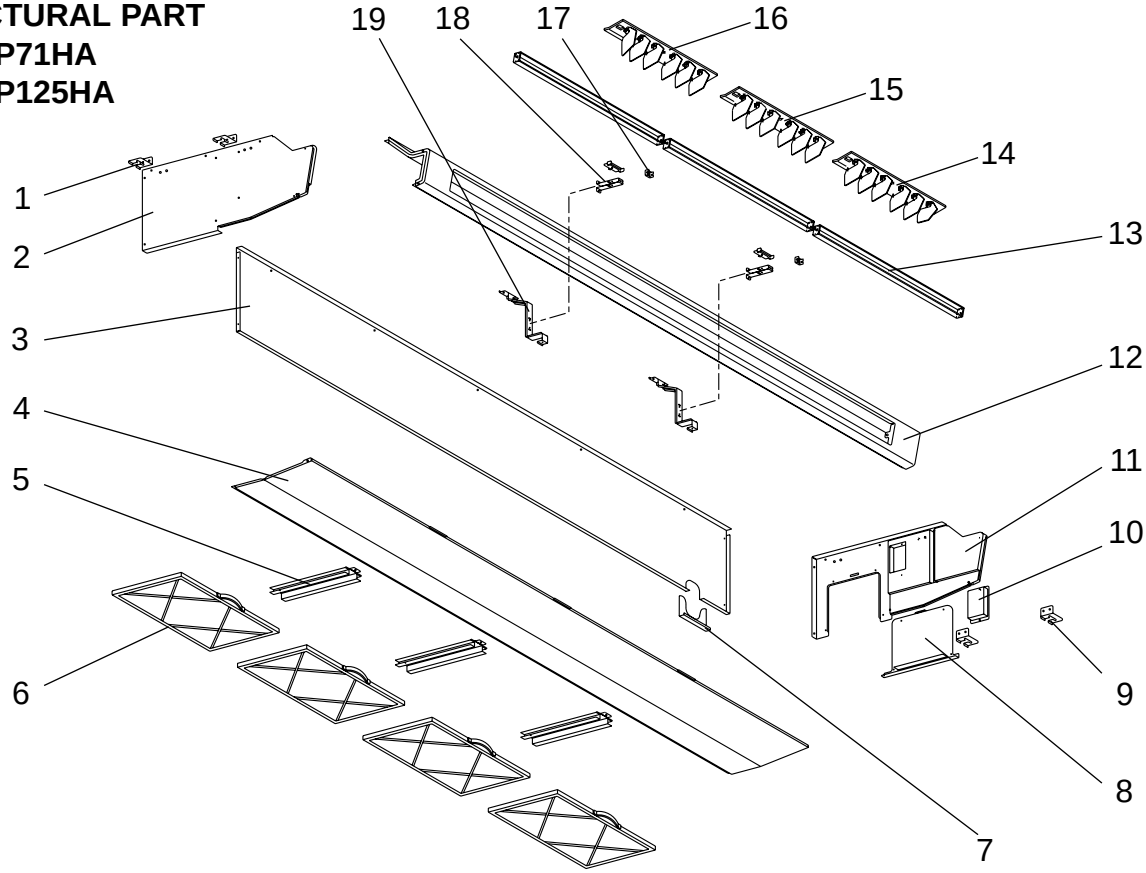
13 PARTS LIST (non-RoHS compliant)

STRUCTURAL PART
PCA-RP71HA
PCA-RP125HA



No.	Parts No.	Parts Name	Specifications	Q'ty / set		Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
				PCA-RP				
				71HA	125HA			
1	R01 13N 809	LEG-L		2	2			
2	R01 13N 662	SIDE PLATE-L		1	1			
3	T7W E02 676	REAR PANEL		1				
	T7W E03 676	REAR PANEL			1			
4	R01 12N 669	UNDER PANEL		1				
	R01 13N 669	UNDER PANEL			1			
5	R01 13N 503	FILTER RAIL		2	3			
6	R01 E05 500	OIL FILTER		3	4			
7	—	DRAIN HOSE SUPPORT		1	1	(BG00K145G02)		
8	R01 13N 667	SIDE COVER		1	1			
9	R01 13N 808	LEG-R		2	2			
10	R01 13N 668	SERVICE PANEL		1	1			
11	R01 13N 661	SIDE PLATE-R		1	1			
12	T7W E02 651	FRONT PANEL		1				
	T7W E03 651	FRONT PANEL			1			
13	R01 12N 002	VANE ASSY		2				
	R01 13N 002	VANE ASSY			3			
14	R01 13N 086	GUIDE VANE ASSY-6L		1	1			
15	R01 13N 087	GUIDE VANE ASSY-6C			1			
16	R01 13N 085	GUIDE VANE ASSY-6R		1	1			
17	R01 13N 533	VANE HOLDER		1	2			
18	—	VANE SUPPORT		1	2	(BG00K146G02)		
19	—	FRONT SUPPORT		1	2	(BG00T773G01)		

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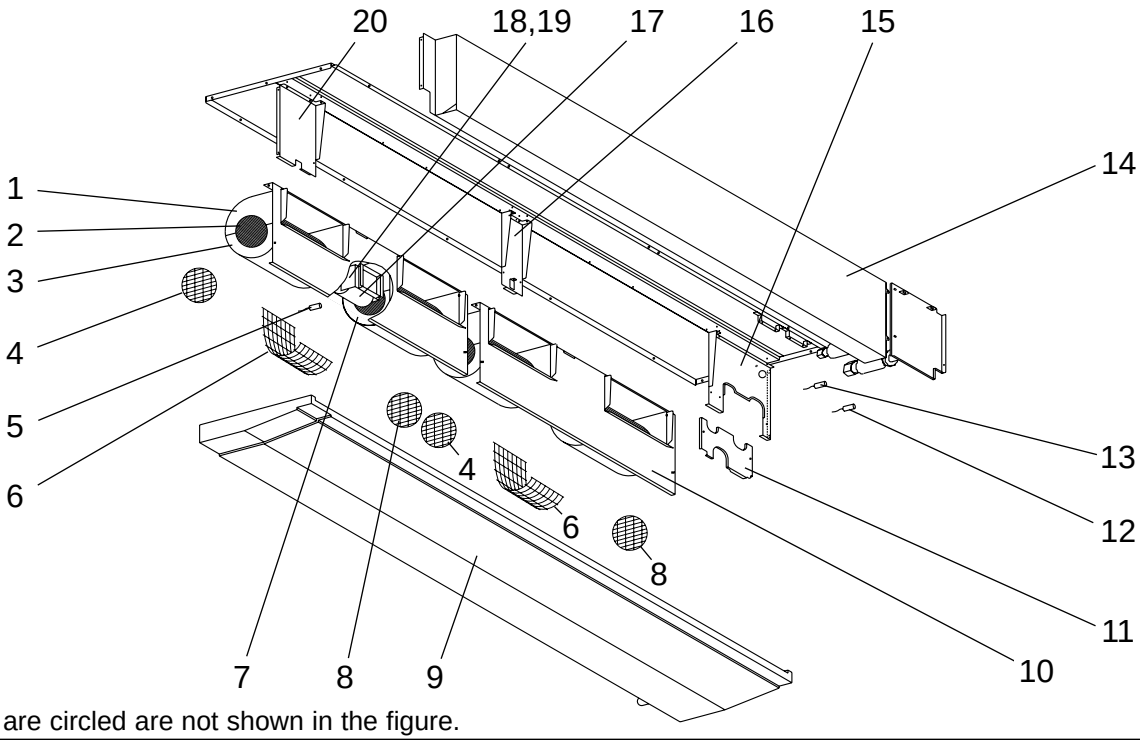
FAN PARTS
PCA-RP71HA
PCA-RP125HA



Part numbers that are circled are not shown in the figure.

No.	Parts No.	Parts Name	Specifications	Q'ty / set		Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
				PCA-RP				
				71HA	125HA			
1	R01 12N 110	T. CASING ASSY		2				
	R01 13N 110	T. CASING ASSY			4			
2	R01 12N 114	SIROCO FAN		2				
	R01 13N 114	SIROCO FAN			4			
3	T7W E02 111	UNDER CASING-L		1				
	T7W E03 111	UNDER CASING-L			2			
4	T7W E12 675	FAN GUARD-S		1	2			
5	R01 E51 202	ROOM TEMPERATUR TERMISTOR		1	1		TH1	
6	T7W E14 675	FAN GUARD-L		1				
	T7W E13 675	FAN GUARD-L			2			
7	T7W E00 111	UNDER CASING-R		1				
	T7W E01 111	UNDER CASING-R			2			
8	T7W E11 675	FAN GUARD-S		1	2			
9	R01 12N 529	DRAINPAN ASSY		1				
	R01 13N 529	DRAINPAN ASSY			1			
10	—	FAN PLATE		1		(BG00N756G15)		
	—	FAN PLATE			2	(BG00N756G14)		
11	—	PIPE SUPPORT		1	1	(BG02T500H04)		
12	R01 13N 202	PIPE TEMPERATURE TERMISTOR		1	1		TH2	
13	R01 E63 202	CONDENSER / EVAPORATOR TEMPERATURE TERMISTOR		1	1		TH5	
14	R01 H04 480	HEAT EXCHANGER		1				
	T7W K07 480	HEAT EXCHANGER			1			
15	—	FAN PLATE SUPPORT-R		1	1	(BG00N893G15)		
16	—	FAN PLATE SUPPORT-C		1	1	(BG00N893G14)		
17	T7W E20 762	FAN MOTOR	PA6V40-CB	1			MF1	
	T7W E21 762	FAN MOTOR	PA4V80-CA		2		MF1,2	
18	R01 45K 130	MOTOR LEG		1	2			
19	R01 83E 126	PIECE FOR MOTOR		1	2			
20	—	FAN PLATE SUPPORT-L		1	1	(BG00N893G13)		
(21)	R01 13N 521	PIPE COVER		1	1			
(22)	R01 13N 072	DRAIN HOSE COVER		1	1			
(23)	R01 811 105	RUBBER MOUNT		2	4			

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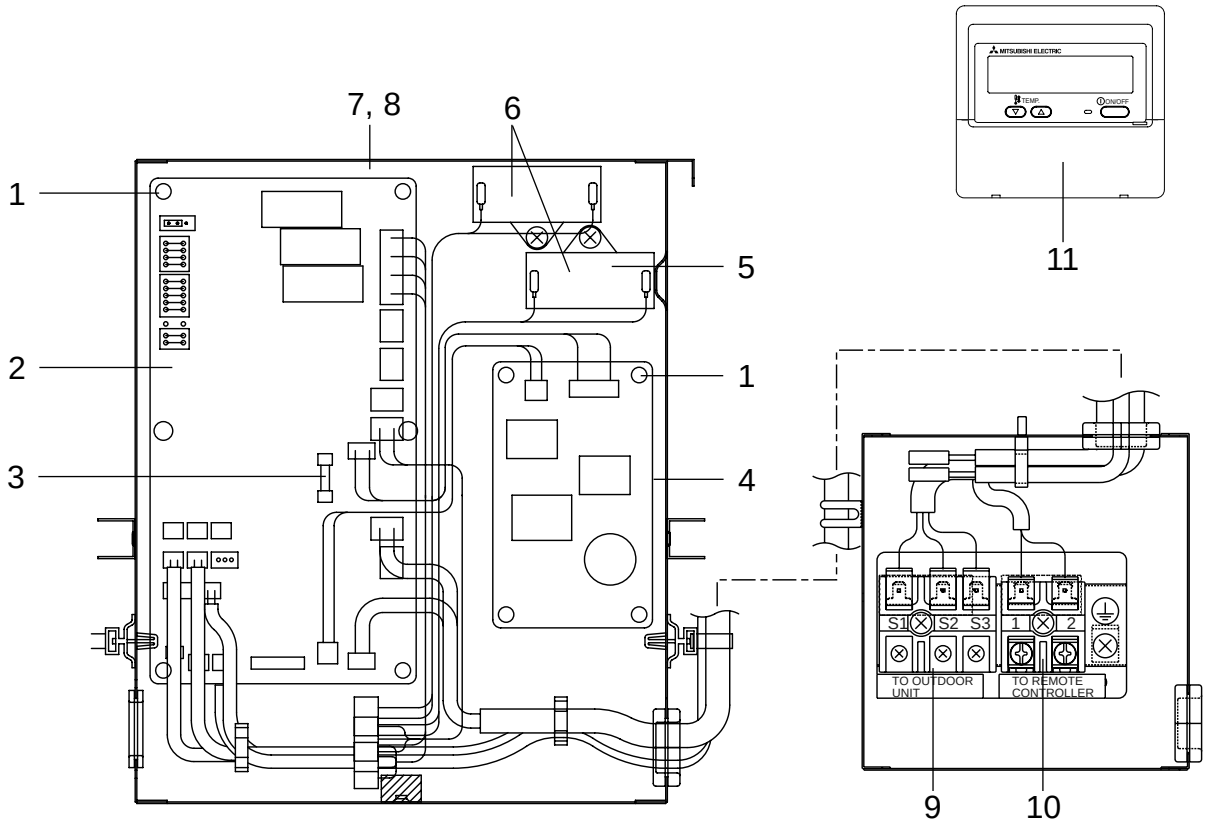
ELECTRICAL PARTS
PCA-RP71HA
PCA-RP125HA



No.	Parts No.	Parts Name	Specifications	Q'ty / set		Remarks (Drawing No.)	Wiring Diagram Symbol	Recom-mended Q'ty
				PCA-RP				
				71HA	125HA			
1	R01 18J 054	SUPPORT		9	9			
2	T7W E41 310	CONTROLLER BOARD		1	1		I.B	
3	R01 E02 239	FUSE	250V 6.3A	1	1		FUSE	
4	R01 E02 313	POWER BOARD		1	1		P.B	
5	R01 A00 255	RUN CAPACITOR	2.5μF, 440V	1			C1	
6	R01 576 255	RUN CAPACITOR	3μF, 440V		2		C1,C2	
7	—	CONTROL BOX COVER		1	1	(BG02N713H05)		
8	—	CONTROL BOX		1	1	(BG00T759G13)		
9	T7W E23 716	TERMINAL BLOCK	3P(S1, S2, S3)	1	1		TB4	
10	R01 556 246	TERMINAL BLOCK	2P(1, 2)	1	1		TB5	
11	T7W E08 713	REMOTE CONTROLLER	PAR-21MAA	1	1		R.B	

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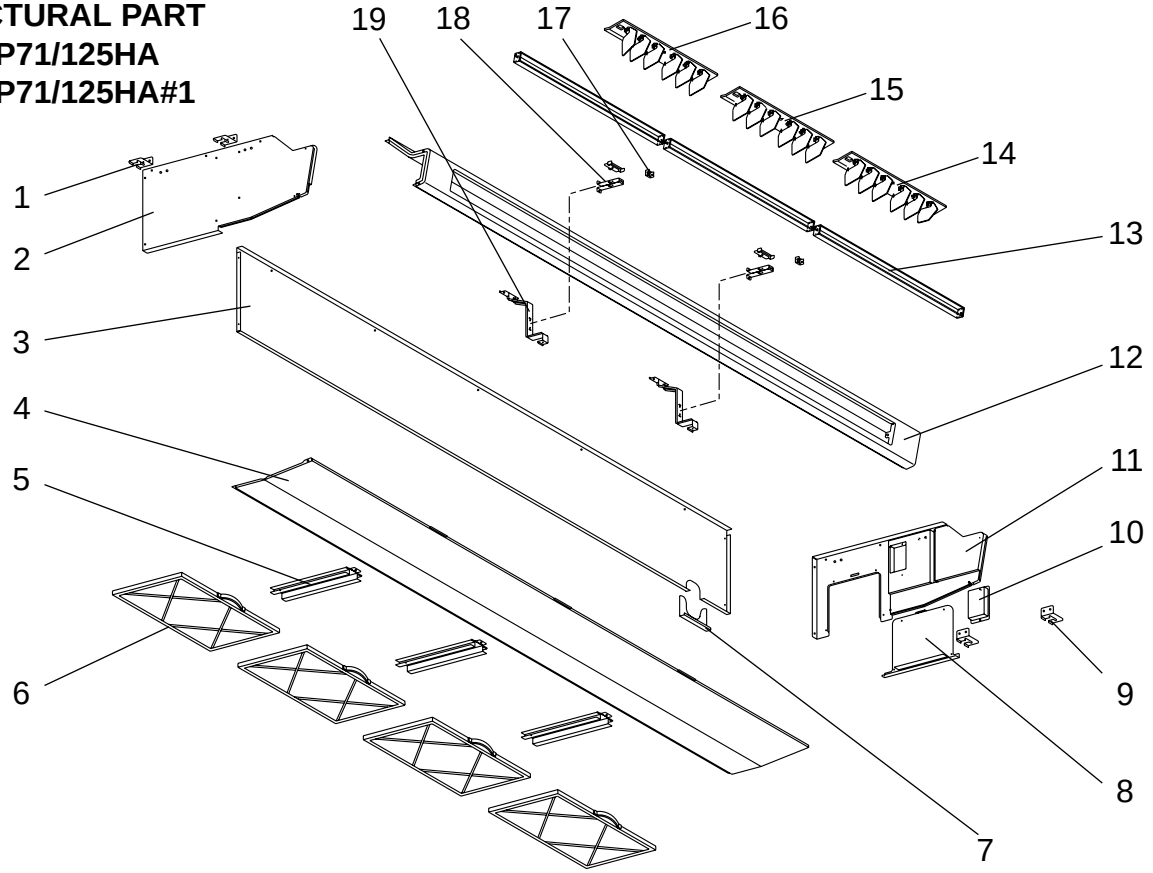
14 RoHS PARTS LIST

STRUCTURAL PART
PCA-RP71/125HA
PCA-RP71/125HA#1



No.	RoHS	Parts No.	Parts Name	Specifications	Q'ty / set				Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
					PCA-RP						
					71HA	71HA#1	125HA	125HA#1			
1	G	R01 14N 809	LEG-L		2	2	2	2			
2	G	R01 14N 662	SIDE PLATE-L		1	1	1	1			
3	G	T7W 14N 676	REAR PANEL		1	1					
	G	T7W 15N 676	REAR PANEL				1	1			
4	G	R01 14N 669	UNDER PANEL		1	1					
	G	R01 15N 669	UNDER PANEL				1	1			
5	G	R01 14N 503	FILTER RAIL		2	2	3	3			
6	G	R01 14N 500	OIL FILTER		3		4				
	G	R01 15N 500	OIL FILTER			3		4			
7	G	—	DRAIN HOSE SUPPORT		1	1	1	1	(BG00K145G02)		
8	G	R01 14N 667	SIDE COVER		1	1	1	1			
9	G	R01 14N 808	LEG-R		2	2	2	2			
10	G	R01 14N 668	SERVICE PANEL		1	1	1	1			
11	G	R01 14N 661	SIDE PLATE-R		1	1	1	1			
	G	T7W 14N 651	FRONT PANEL		1	1					
12	G	T7W 15N 651	FRONT PANEL				1	1			
	G	R01 15N 002	VANE ASSY		2	2					
13	G	R01 16N 002	VANE ASSY				3	3			
14	G	R01 14N 086	GUIDE VANE ASSY-6L		1	1	1	1			
15	G	R01 14N 087	GUIDE VANE ASSY-6C				1	1			
16	G	R01 14N 085	GUIDE VANE ASSY-6R		1	1	1	1			
17	G	R01 14N 533	VANE HOLDER		1	1	2	2			
18	G	—	VANE SUPPORT		1	1	2	2	(BG00K146G02)		
19	G	—	FRONT SUPPORT		1	1	2	2	(BG00T773G02)		

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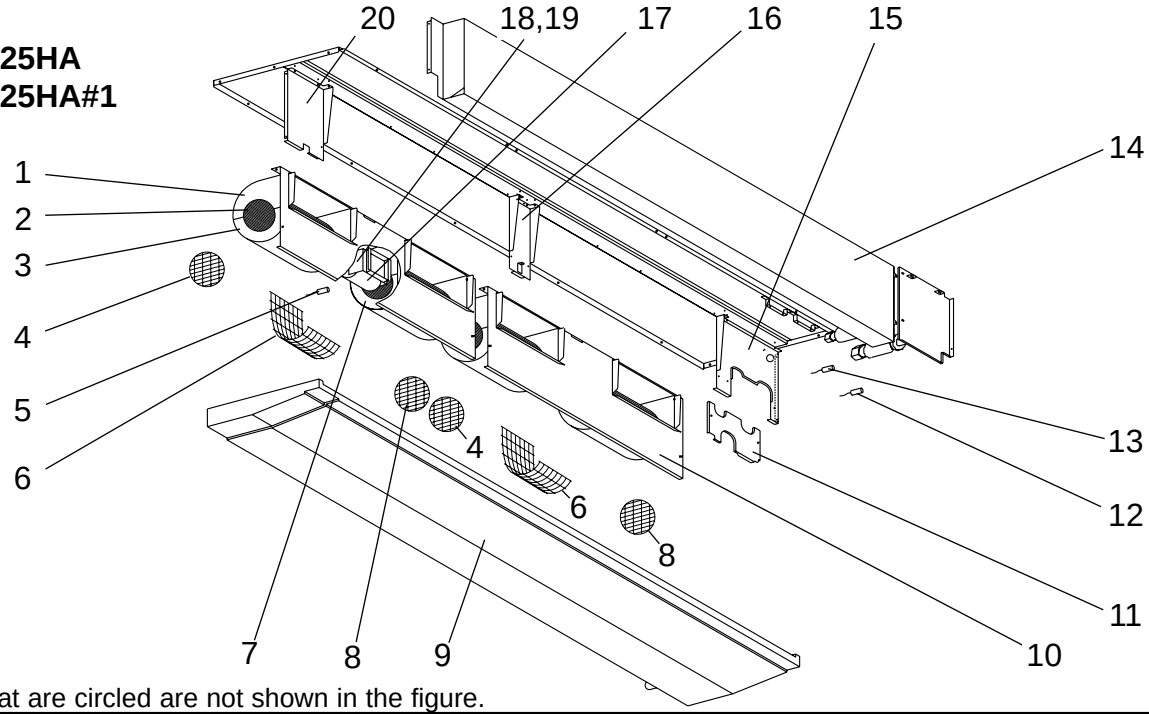
FAN PARTS
PCA-RP71/125HA
PCA-RP71/125HA#1



Part numbers that are circled are not shown in the figure.

No.	RoHS	Parts No.	Parts Name	Specifications	Q'ty / set PCA-RP 71HA·71HA#1	Q'ty / set PCA-RP 125HA·125HA#1	Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
1	G	R01 14N 110	T. CASING ASSY		2				
	G	R01 15N 110	T. CASING ASSY			4			
2	G	R01 14N 114	SIROCO FAN		2				
	G	R01 15N 114	SIROCO FAN			4			
3	G	T7W 16N 111	UNDER CASING-L		1				
	G	T7W 17N 111	UNDER CASING-L			2			
4	G	T7W 18N 675	FAN GUARD-S(L)		1	2			
5	G	R01 15N 202	ROOM TEMPERATUR TERMISTOR		1	1		TH1	
6	G	T7W 15N 675	FAN GUARD-L		1				
	G	T7W 16N 675	FAN GUARD-L			2			
7	G	T7W 14N 111	UNDER CASING-R		1				
	G	T7W 15N 111	UNDER CASING-R			2			
8	G	T7W 17N 675	FAN GUARD-S(R)		1	2			
9	G	R01 15N 529	DRAINPAN ASSY		1				
	G	R01 16N 529	DRAINPAN ASSY			1			
10	G	—	FAN PLATE		1		(BG00N756G17)		
	G	—	FAN PLATE			2	(BG00N756G16)		
11	G	—	PIPE SUPPORT		1	1	(BG02T500H04)		
12	G	R01 16N 202	PIPE TEMPERATURE TERMISTOR		1	1		TH2	
13	G	R01 17N 202	CONDENSER / EVAPORATOR TEMPERATURE TERMISTOR		1	1		TH5	
14	G	R01 J68 480	HEAT EXCHANGER		1				
	G	T7W H55 480	HEAT EXCHANGER			1			
15	G	—	FAN PLATE SUPPORT-R		1	1	(BG00N893G15)		
16	G	—	FAN PLATE SUPPORT-C		1	1	(BG00N893G14)		
17	G	T7W 14N 762	FAN MOTOR	PA6V40-CC	1			MF1	
	G	T7W 15N 762	FAN MOTOR	PA4V80-CA		2		MF1,2	
18	G	R01 14N 130	MOTOR LEG		1	2			
19	G	R01 14N 126	PIECE FOR MOTOR		1	2			
20	G	—	FAN PLATE SUPPORT-L		1	1	(BG00N893G13)		
㉑	G	R01 14N 521	PIPE COVER		1	1			
㉒	G	R01 14N 072	DRAIN HOSE COVER		1	1			
㉓	G	R01 14N 105	RUBBER MOUNT		2	4			

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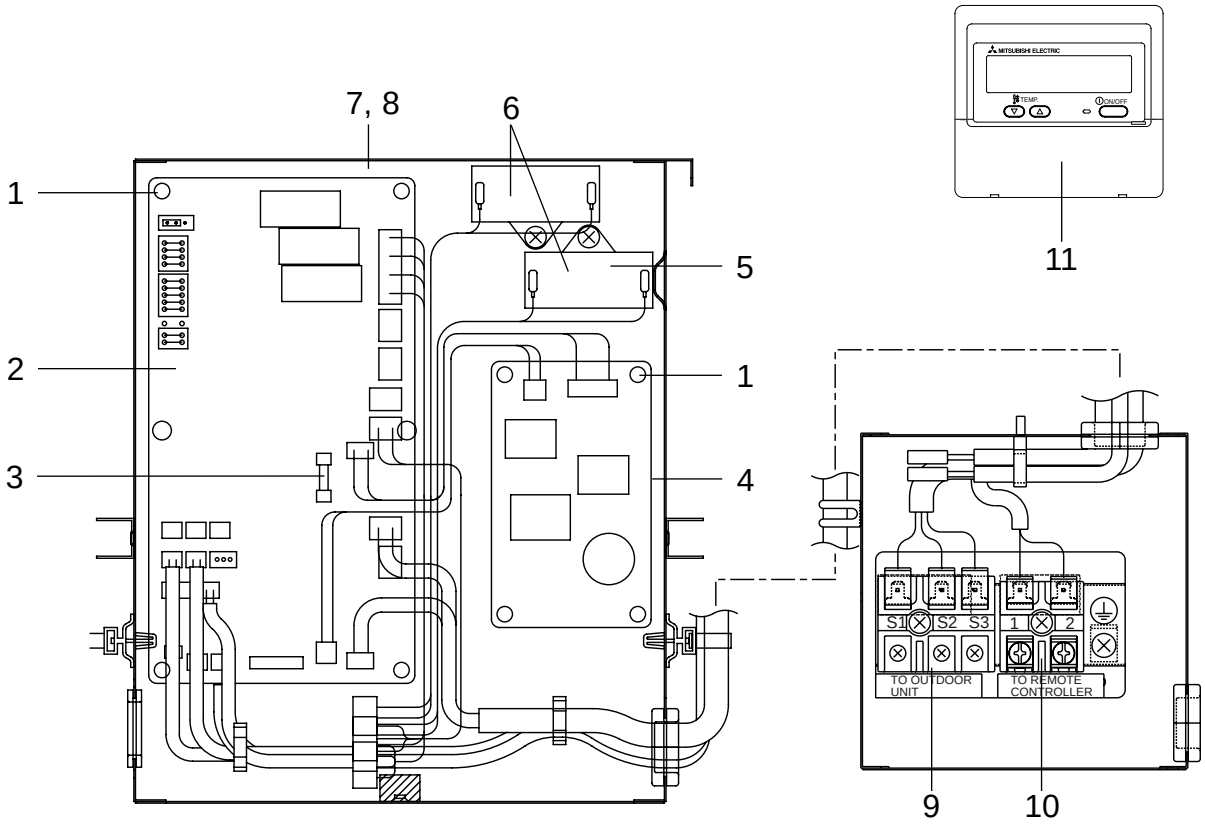
ELECTRICAL PARTS
PCA-RP71/125HA
PCA-RP71/125HA#1



No.	RoHS	Parts No.	Parts Name	Specifications	Q'ty / set				Remarks (Drawing No.)	Wiring Diagram Symbol	Recommended Q'ty
					PCA-RP						
					71HA	71HA#1	125HA	125HA#1			
1	G	R01 20J 054	SUPPORT		9	9	9	9			
2	G	T7W E51 310	CONTROLLER BOARD		1		1			I.B	
	G	T7W E74 310	CONTROLLER BOARD			1		1		I.B	
3	G	R01 E06 239	FUSE	250V 6.3A	1	1	1	1		FUSE	
4	G	R01 E38 313	POWER BOARD		1	1	1	1		P.B	
5	G	R01 14N 255	RUN CAPACITOR	2.5μF, 440V	1	1				C1	
6	G	R01 E12 255	RUN CAPACITOR	3μF, 440V			2	2		C1,C2	
7	G	—	CONTROL BOX COVER		1	1	1	1	(BG02N713H07)		
8	G	—	CONTROL BOX		1	1	1	1	(BG00T759G16)		
9	G	R01 E20 246	TERMINAL BLOCK	3P(S1, S2, S3)	1	1	1	1		TB4	
10	G	R01 E21 246	TERMINAL BLOCK	2P(1, 2)	1	1	1	1		TB5	
11	G	T7W E11 713	REMOTE CONTROLLER	PAR-21MAA	1	1	1	1		R.B	

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